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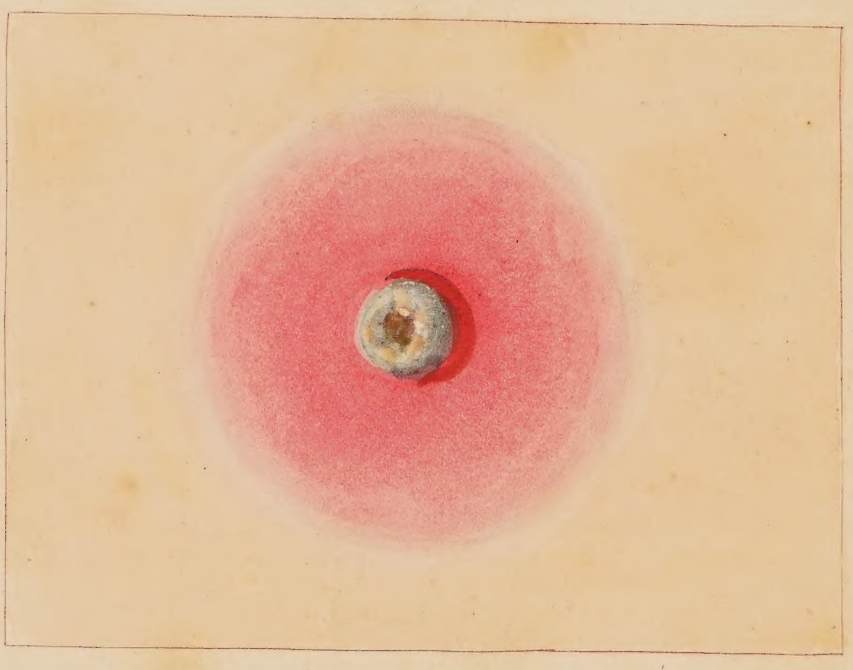

Figure 3rd

AN ADDRESS

TO THE

MEDICAL PRACTITIONERS OF IRELAND,

ON THE SUBJECT OF

VACCINATION.

SECOND EDITION,

Illustrated by a Plate, representing the different Stages of the Vaccine affection.
First Figure, eighth day—second, twelfth day—third, the crust.

THE ORIGINAL DRAWINGS AND PLATE COLOURED BY MR. CONOLLY.

WITH AN APPENDIX,

Containing an Abstract of Correspondence with many of the most respectable professional Gentlemen in Ireland.

BY

SAMUEL B. LABATT, M. D.,

HONORARY FELLOW OF THE COLLEGE OF PHYSICIANS; SECRETARY TO THE COW POCK INSTITUTION, SACKVILLE-STREET, DUBLIN; FORMERLY MASTER, AND AT PRESENT CONSULTING PHYSICIAN OF THE LYING-IN HOSPITAL, ETC. ETC.

" —— Quid tuta times? Accingere; et omnem
Pelle moram. OVID.

DUBLIN:

HODGES AND SMITH; FANNIN AND CO.

LONDON: CHURCHILL; SIMPKIN, MARSHALL, AND CO.

EDINBURGH: MACLACHLAN AND STEWART.

1840.

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ERRATA.

Page 59, line 16, *for* 1704, *read* 1784.
—— 67, line 13, *for* Findevy, *read* Hindevy.
—— 92, Note, *for* deride, *read* decide.
—— 165, Penultimate line, *for* neccessary, *read* necessary
—— 124, lines 15 and 31, *for* degenerated, *read* degenerate.
—— 170, line 26, *for* opportunites, *read* opportunities.
—— 175, line 28, *for* thing, *read* think.
—— 176, line 30, *dele* in.
—— 187, line 43, *for* 1,700, *read* 4,700.

Thomas I. White, Printer, 65, Fleet Street.

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*** The several communications in the Appendix being without dates, it is necessary to state that they were all made within the last six months.

TO THE DIRECTORS

OF THE

COW POCK INSTITUTION,

SACKVILLE STREET, DUBLIN.

GENTLEMEN,

I embrace the present opportunity of expressing my grateful acknowledgments for the very great kindness shewn to, and the confidence placed in me, by you and your predecessors, since the opening of your Institution in 1804. In conjunction with your excellent and efficient Assistant-Secretary, Dr. Ferguson, my friend and fellow-labourer, I have used my humble efforts, and, I trust, not without benefit to the public, to carry into effect your intentions towards the promotion of Vaccination in Ireland; and, our united exertions having met with the steady co-operation of the medical gentlemen throughout the country, I feel justified in stating that there is no part of the British dominions where Vaccine Inoculation is more generally or successfully practised; and, without stopping to inquire into the causes which have hitherto kept up and promoted the spread of small pox infection in this island, I will at once express my full conviction, that a due attention to the wise regulations you suggested to the Authorities, and the strict

enforcement of the act for suppressing inoculation for small pox, must lead to the total extermination in Ireland of that loathsome disease.

It would ill become me to speak comparatively of the exertions of any individual among the Directors of the Cow Pock Institution, but it would inflict an injury on my feelings were I to suppress my sense of the obligations which your Institution, of which he may be regarded as the founder, and the cause of Vaccination owe to your late much respected director, Dr. Clarke, the energies of whose great mind were unceasingly directed to the improvement of his profession. He fully appreciated the value of Dr. Jenner's discovery, and practised vaccination extensively to the latest period of his long and useful professional life, every year affording him additional proof of its efficacy. And I may here be permitted, most respectfully, to record the name of another gentleman, Dr. Renny, Director-general of the Army Medical Department in Ireland, who has from the commencement been a most zealous friend to your Institution, and by whose judicious arrangements the army serving in Ireland has had the full benefit of Vaccination, and the practice thereby still further promoted.

I remain, Gentlemen,

Your most obedient humble servant,

SAMUEL B. LABATT.

Rutland Square, Sept. 20, 1840

INTRODUCTION.

In the first Edition of this Address, published in 1805, I expressed regret that the invaluable discovery of Cow Pock was not received by my countrymen with the enthusiasm which marked its progress in other countries, and that it was not regarded by the profession with that interest to which I thought it justly entitled. I am, however, happy now to state, that this apparent indifference, or I should rather say cautious reserve, has been laid aside—the efficacy of the practice being established; and I can now bear testimony to the disinterested zeal since evinced by my professional brethren through Ireland in promoting Vaccination. Had their exertions to suppress variolous inoculation and encourage vaccination been aided by the higher powers, there would, I feel satisfied, be little heard at the present day, of small pox in this island. The variolous infection has been kept up and disseminated by itinerant quacks, inoculating in every market town the children of the credulous poor, and I am sorry to hear that there are a few medical men who follow the example; but I am happy to say that this pernicious practice will be obviated by the Vaccination Extension Bill,* which is now the

* "And be it further enacted, that any person, who shall from and after the passing of this Act, produce, or attempt to produce in any person, by inoculation with variolous matter, or by wilful exposure to variolous matter, or to any matter, article, or thing impregnated with variolous matter, or wilfully by any means whatsoever, produce the disease of Small Pox in any

law of the land, and I hope a system will be established to ensure to the country the full benefit of Vaccination.

In the present publication I will endeavour to bring before my readers every thing worthy of note connected with the subject, that has occurred since I last wrote; but on a most attentive retrospect of all that has been said and written, on the theory and practice of Vaccination, since Dr. Jenner's time, I confess I see little of importance to add to, or detract from, his opinions and precepts on the more useful and practical points. His description of Cow Pock is at this day found to be most correct—his opinion as to its nature and origin has been confirmed by further investigation—and we still look upon him as our best guide in conducting the practice. In fact, a careful perusal of his works will shew that he has left few things connected with his great discovery untouched or unfinished.

I will bring under review the late opinions respecting the origin of Cow Pock, and its identity with small pox, also re-vaccination, and, as connected with it, the nature and extent of the vaccine protection; and, having received answers to queries which I circulated widely through the country and the city, I am enabled to lay before my readers, a summary of the past and present experience and opinions of many of the most respectable practitioners in Ireland, which I will endeavour to do faithfully and impartially, suppressing nothing unfavourable to the cause of Vaccination, nor any thing of a contrary tendency, unsupported by facts.

In justice to the matter I have in hand, I will be obliged to draw extensively on the very able and correct

person in England, Wales, or Ireland, shall be liable to be proceeded against, and convicted summarily before any Two, or more Justices of the Peace, in Petty Sessions assembled, and for every such offence, shall upon conviction, be imprisoned in the Common Goal, or House of Correction, for any term not exceeding One Month."—*Vide Vaccination Extension Bill.*

report of the Section appointed to inquire into the present state of Vaccination, drawn up by their eminent chairman, Dr. Baron, and read at the Medical and Surgical Association, held at Liverpool, July 25, 1839.

The best plates which could be procured are annexed, exhibiting the different appearances of the arm, which, attentively compared with the progress and history of the complaint, will, I hope, materially assist in discriminating the genuine Cow Pock.

If I shall contribute to remove doubts, to confirm the wavering, to assist in establishing the criterion of the genuine disease, and stimulate the exertions of others, to render the practice of vaccine inoculation more extensively useful through this part of the united kingdom, I shall have fully obtained the object I had in view, and my labour will be amply compensated. To those who may think me prolix, and guilty of frequent repetitions, I must offer as my apology the anxious desire I have to impress upon the minds of junior practitioners, for whom this publication is chiefly intended, a proper knowledge of a practice, in the due performance of which, the public is so deeply interested.

AN ADDRESS

TO THE

MEDICAL PRACTITIONERS OF IRELAND,

ON THE SUBJECT OF

VACCINATION, &c.

In this age, replete with invention, when more rapid advances have been made in every branch of useful knowledge than during any former period, the improvements in medicine have kept pace with the progress of other sciences. Among these, the discovery of Vaccination is eminently conspicuous, affording a prospect of the most permanent advantages, whether we regard it as healing the wounds of suffering humanity, or conferring the most essential national benefits, by increasing the resources of population.

One would be inclined to suppose that the celebrated Dr. Boerhaave had some *presentiment* of the Cow Pock, for in his Aphor. de Cognoscendis et Curandis Morbis, he thus expresses himself:—"Correctio specifica niti debet invento remedio opposito illi veneno contagioso, quod tam parva mole susceptum reliqua parit, ut effecta" (1382, 1383.)

"Quale (1390) inveniri posse, comparatio historiæ antidotorum, et indoles hujus mali, faciunt sperare; et ad indagandum impellit summa hinc futura, humano generi utilitas."

The learned Dr. Mead wonders much how Boerhaave could be induced to hope that an antidote against small pox would ever be discovered; happily however for the human race, Boerhaave's hopes have not been disappointed.

That the Cow Pock, as a preventive of small pox, is entitled to the confidence of the public, must be allowed by every man who will take the trouble of being informed of one tenth part of the evidence, which has already appeared in favour of a practice, which, according to the most moderate computation, enables us to preserve the lives of more than a million of our fellow creatures annually, in Europe alone!

The merits of this, as well as of every other discovery in medicine, must stand or fall by the concurring testimony of the most learned and discerning men of the profession in every country, whom we must consider as best qualified to appreciate its value. That such have given their decided sanction to the practice, will fully appear on a perusal of any of the numerous books and reports which have been written upon the subject. Indeed I am of opinion that Dr. Jenner's work alone should be sufficient to convince all who are not determined to be sceptics. It may be thought, perhaps, that Jenner, like a fond parent, was inclined to paint his offspring in the most flattering colours, ample experience, however, has confirmed the truth of his positions. What stronger proof in favour of Cow Pock inoculation can be brought forward, than that physicians of the first eminence, in every quarter of the globe, use every exertion to promote the practice; that they adopt it in their own families; and that most of them absolutely decline inoculating with small pox? Can it be supposed, that, in so doing, they are any otherwise interested, than for the good of society at large? Certainly not: for it must be allowed that the abolition of small pox would necessarily close up from

them and their heirs for ever, a fruitful source of emolument.

Mr. Sutton, who practised small pox inoculation for almost half a century, acknowledged that he was not able to produce the disease in any of those who had had the Cow Pock; and although it cannot be supposed that any man would willingly give up a practice, by which for so long a time he gained a handsome livelihood, yet, with great candour Mr. Sutton admitted the efficacy of Cow Pock, and practised it on several occasions.

The frequent reports of cases in which the Cow Pock has been supposed to fail in affording the promised security against small pox, has tended very much to impede its general diffusion in Ireland. Since the introduction of vaccination into this country, having bestowed considerable attention upon it, and spared no pains in examining with impartiality these alledged failures, it affords me much pleasure to state, that on an accurate investigation, I generally found them to originate either in ignorance or absolute misrepresentation of facts, of which I could adduce some remarkable instances.

I may here notice a striking contrariety in the reports I have received from different practitioners on the extent of the vaccine protection. Some of my correspondents admit that they have had many cases of small pox after vaccination. Others have been more successful; and there are a few who, in many years extensive practice, have scarcely met a case of failure. A highly respectable practitioner in Belfast has been for thirty years and upwards extensively engaged in vaccination, without meeting with a single case of failure. Such conflicting statements well merit inquiry, which, no doubt, would lead to useful practical results—probably some important difference as to the mode of conducting the practice of the individuals would be discovered.

From the careless manner in which Vaccination has

been performed by inexperienced practitioners, it is contrary to reason or common sense to expect that adverse cases will not now and then occur. But if it has been proved in millions of instances, that Cow Pock inoculation, when correctly conducted, is a certain preventive of small pox, how can a few exceptions stand in competition with such an established law? The inattention and ignorance of practitioners have often brought into discredit the most active and efficacious remedies. In no case has this been more remarkable than in the practice of vaccination, which some have presumed to commence without having ever seen the disease, or even read a book upon the subject. That such persons should be deceived as to the characteristics of the disease, can excite no surprise; and that their rash and inaccurate reports must lead to conclusions very prejudicial to the reputation of Cow Pock is equally obvious.

It must be admitted, however, that in some instances Cow Pock will form fairly on the arm, and go through all its stages with apparent regularity, without affording protection against a future attack of small pox. Such occurrences are very rare indeed, compared with the millions of vaccinations performed; and hence the College of Physicians of London, in their very conclusive report, made to Parliament in 1807, stated that, "among several hundred thousand cases, with the results of which the College have been made acquainted, the number of alledged failures have been *surprisingly small*, so much so as to form certainly no reasonable objection to the general adoption of vaccination." The College also stated, that in the very few instances where small pox occurred after vaccination, the disease was mild and transient. This favourable report is quite consistent with the extensive experience of the Cow Pock Institution in Dublin. The most strenuous friends of Cow Pock, even Jenner himself, never asserted that its prophylactic virtues were superior to those of small pox, as inoculation for the latter,

besides the certain risk attending it, of keeping up and spreading infection, occasionally fails to prevent re-infection, and why should we expect the former to be exempt from the like contingency? The well authenticated cases of small pox following *perfect* Vaccination, are, I repeat it, so very few, in proportion to the vast number that have been vaccinated, as merely to form a rare exception to the general proposition, that "Cow Pock affords perfect security against small pox;" and the salutary effects of Vaccination on the population, must be apparent to every observer in walking the streets. We now see few or no cases of lameness, loss of sight, unsightly deformities of the skin, or of the many other marks of ill health and broken constitution, which were known often to follow small pox, even when communicated by inoculation. Dr. Jenner gave it as his opinion, at an early period, that with regard to their prophylactic properties, small pox and cow pock were governed by the same laws, both being equally protective, but neither of them infallible. It should be borne in mind that neither the casual nor inoculated small pox can perfectly remove the susceptibility to a future attack of that disease. A person who has had small pox before, whether in the mild or confluent form, may, by inoculation, or exposure to the contagion, have an eruption, attended with more or less indisposition. We often see nurses, during their attendance on children ill of small pox, have a variolous eruption, as I lately witnessed in a woman who, while wet nursing a child with small pox, had many pustules on her breast, neck, and shoulders, with some fever. Infection taken from those local pustules will produce genuine small pox. There are many facts recorded by medical writers, to prove that the human constitution is always more or less susceptible of variolous infection, notwithstanding former attacks of that disease; the insertion of small pox matter in the arms of persons who had small pox before, will always

produce inflammation of the part, sometimes with axillary pains and fever, and perhaps pustular eruption on different parts of the body; and we should expect the same to occur after Vaccination. Variolous infection produces in some of those who have been previously vaccinated, certain effects. In some, fever occurs for three or four days without any eruption. In others small hard papulæ, preceded by slight fever, appear, which desquamate in two or three days, without suppuration. In others, again, small hard pustules appear, which turn brown, and dry off rapidly. Sometimes there is more fever, and the pustules remain longer. In the great majority of these cases, the fever is light, and in all the pustules are small, and decline before the 5th day, leaving light brown stains, which remain for some time, but leave no depression.

The Honorable Colonel P—— had high fever and violent headache for two days. On the morning of the third he was quite relieved, by the appearance of a few small pustules on the face and breast, which died off on the third day. He had been exposed to small pox infection a few days before, by a beggar, with a child covered with variolous eruption, coming close to his gig to beg for alms. Mrs. P——, who was in the gig with him, escaped. I have seen a very few cases, certainly not more than ten,* if so many, where I had every reason to know the previous Vaccination was skilfully conducted, in which small pox appeared, and ran its usual protracted course, with severe fever, and copious eruption. On two it was confluent, but in none was there any *secondary* fever, and in all I remarked a speedy alleviation of symptoms, on the appearance of the eruption. I have, indeed, often witnessed variolous like eruptions, which, however, in mildness of symptoms and rapidity of progress, differed essentially from natural small pox. No case has ever occurred in my practice, in which small pox appearing

* Vide Appendix.

after Vaccination caused death, loss of sight, lameness, or, with the exception of slight pitting, any other deformity.

Although the Cow Pock be a mild disease, and the mode of inoculation apparently simple, yet a previous knowledge of the complaint is not the less necessary; and, indeed, the comparative mildness of it has led many to suppose that it is sufficient to examine the patient once or twice after inoculation. I am, however, convinced, that unless every stage of the complaint be strictly attended to, we cannot give a correct opinion upon the case. It should be recollected that "there are gradations in the state of the vaccine vesicle, from that slight deviation from the usual course which is of no consequence, up to that which affords no security at all," and which can only be distinguished by closely watching the arm through the whole progress of the vesicle. The late Dr. Drennan, who paid much attention to the subject, once said to me in a note, "There is a fear of our falling into the extreme of simplicity in our management of Cow Pock."

Dr. O'Reilly, one of the most learned physicians of Prague, in a letter to Dr. De Carro, of Vienna, observes, "that a spirit of observation is much more necessary in the inoculation of cow pock than in that of the small pox.' And Dr. De Carro himself, as well as most other experienced practitioners, is of the same opinion. A correspondent of Mr. Ring, Mr. Erving, is fearful lest "the practice being so very simple, and the operation and effects of the disease so innocent, it may descend into the hands of the ignorant, careless, and unwary, so as to defeat all the promised good effects, and leave the patient, by throwing him into a false state of security, in a more perilous situation from the variolous infection than he was at first." Certain I am, that many points relating to this important subject admit of farther elucidation; therefore every care should be taken in conducting the practice; and I would advise those who are employed therein,

to keep an exact register of their inoculations, and to note with accuracy every circumstance that may occur in the progress of the complaint—thus mistakes would be avoided, and facts collected, which might tend to throw some further light upon the laws of agency of vaccine matter on the animal œconomy.* To those who are about to commence the practice of Cow Pock inoculation, a strict attention to the following admonition of Dr. Jenner, is particularly necessary:—"One of the first objects, then, of this pursuit, as I have observed, should be, to learn how to distinguish, with accuracy, between that particular pustule, (vesicle,) which is the true Cow Pock, and that which is spurious. Until experience has determined this, we view our object through a mist. Let us, for instance, suppose that the small pox and the chicken pock, were at the same time to spread amongst the inhabitants of a country, which had never been visited by either of these distempers, and where they were quite unknown before—what confusion would arise! The resemblance between the symptoms of the eruptive fever, and between the pustules, in either case, would be so striking, that a patient who had gone through the chicken pock to any extent, would feel equally easy, with regard to his future security from the small pox, as the person who had actually passed through that disease. Time and future observation, would draw the line of distinction; so, I presume, it will be with Cow Pock, until it is more generally understood."

In another place the Doctor observes, "That although

* The following circumstance, which I should not expect would occur in the present state of our knowledge of Cow Pock, was lately communicated to me by Dr. Plant of Kingstown:—"A numerous family having been re-vaccinated by the attending apothecary, the usual festering sore appeared on the *third or fourth* day, from which, it being considered genuine vaccine, numerous children were inoculated." The Doctor very properly adds, "I have no doubt that every person so vaccinated, when exposed to the infection of small pox, will take it."

the Vaccine inoculator does not inflict a severe disease, but, on the contrary, produces a mild affection, scarcely meriting that term, yet, nevertheless, he should be extremely careful to obtain a just and clear conception of this important branch of medical science. He should not only be acquainted with the laws and agencies of the vaccine virus on the constitution, but with those of the variolous also, as they often interfere with each other. A general knowledge of the subject is not sufficient to enable or to warrant a person to practise vaccine inoculation; he should possess a particular knowledge; and that which I should wish strongly to inculcate, as the great foundation of the whole, is an intimate acquaintance with the character of the true and genuine vaccine pustule, (vesicle)—the spurious pustule, (vesicle,) would then be readily detected, whatever form it might assume, and errors known no more."

Dr. De Carro, after describing the uninterrupted success of Vaccination in Germany, and other quarters of the globe, adds, "How, then, to account for the cases adverse to the efficacy of Cow Pock in England, when we see such invariable success in other countries *with the matter sent from England.* Surely such instances must be owing to errors now unpardonable in the country which gave birth to Jenner—to that man who is as great by the importance of his discovery, as he is by the manner in which he published it. If English vaccinators follow his precepts as faithfully as we do on the Continent, and as British and Indian physicians do in Asia, none of those fatal events will occur."

There is so much skill and attention required in the practice of Vaccination, that it would, I think, be best to confine it to professional men; for besides the great accuracy required in the practice itself, many circumstances occur, of which none but medical men can rightly judge. Who but a professional man can decide whether

a patient be in a fit state for the operation ? or who else can fairly appreciate the influence of any supervening disease on the vaccine ? Mr. Brice informs us of the vaccination of the children of two parishes in Scotland, by unprofessional persons, unacquainted with Cow Pock. The consequence was, that when the small pox appeared some time after in those places, it attacked all who were thus inoculated, while those who had been vaccinated by persons acquainted with Cow Pock escaped.

The most zealous friends to small pox inoculation must allow, that under the best management it proves sometimes fatal, frequently dangerous, and apt to disfigure the body with lameness, ulcers, eruptions on the skin, blindness, &c., that it keeps up and spreads the contagion, and that in many instances it resembles, in its appearance and consequences, the natural small pox.* A discovery which obviates such evils is certainly the greatest which the annals of medicine can boast of. Innumerable and decisive experiments made in all quarters of the globe, by the most enlightened men of the profession, prove, in the most satisfactory manner, that Cow Pock inoculation possesses all these advantages.

From Dr. Turin's calculation, made from the London bills of mortality for forty years, it appears that before Vaccination was introduced, of all who were born, one in fourteen died of small pox—of those affected by natural small pox, one in five perished, and of those inoculated, one in fifty.

From Sir Gilbert Blanes Tables it appears that the ratio borne by the mortality of small pox to the total mortality was as follows—Previous to small pox inoculation the proportion was 78 in 1000—after the introduction of that practice, 90 in 1000—and during twenty years after

* In 1808, the child of a poor room-keeper in this city, who was inoculated with small pox, infected nine children in the same house, of whom six died.

the introduction of vaccination, the proportionate mortality was diminished to 53 in 1000—so that the substitution of vaccination for small pox inoculation has lessened the proportionate mortality of small pox by nearly one-half. Bills of mortality are not kept in Dublin, but from my own observation, aided by the best information I can obtain, I feel justified in stating that the mortality from small pox has greatly decreased since the introduction of vaccination in this city. *Vid Appendix.*

The knowledge of cow pock, and the belief of its being a perfect preventive of small pox, is by no means of modern date. By traditionary accounts we are informed, that it has been known for centuries; this is necessary to mention because many assert that it was never heard of till within these few years, and that therefore less reliance is to be placed on the permanency of its prophylactic virtues.

Before I proceed to the more particular part of our subject, it may not be altogether uninteresting to take a concise view of the rise and progress of the Jennerian discovery.

In several dairy counties in England, about fifteen, a peculiar disease has from time immemorial been observed to affect the cows, hence vulgarly called the cow pock, or pap pox. This disease generally appears in spring, and shows itself in irregular fiery vesicles, on the teats and udders of the cows, which are of a palish blue or livid colour, and contain a thin acrid fluid. The parts round the eruptions become hard, swelled, and inflamed, and the vesicles are apt to run into deep eroding ulcers, which prove very difficult of cure unless early attention be paid to them. The animal is sometimes considerably disordered; her appetite becomes impaired, and the secretion of milk is much diminished: the disorder, however, has seldom of late years proved fatal. It has been said to affect the same cow frequently, but the subsequent attacks

are much slighter than the first. This complaint is very infectious, not by means of contagious effluvia, but by the contents of the vesicles being carried from one cow to another by the milkers. Hence those cows only who give milk are infected with it.* The disease is frequently communicated to the hands of the milkers, who thus become secure from ever after receiving the contagion of small pox. In a few days after the virus has been applied, if the person be in a fit state to receive it, there may be observed upon the hands inflamed spots, which soon appear like small blisters, becoming at length large vesicles of a circular form, with depressed centre and elevated edges; they are of a bluish colour, and contain a transparent fluid. In some days the parts surrounding the vesicles become swelled, hard and inflamed, and assume an erythematous appearance. Pain and swelling of the axillary glands, and symptoms of fever supervene, which are commonly slight and transient, unattended by any eruption over the body. The casual cow pock, however, is more severe than that communicated by inoculation, but whether this is owing to the number of vesicles, or to the structure of the parts they occupy, I cannot pretend to say; possibly both these circumstances may tend to aggravate the disease. In a few days, at the utmost, the constitutional symptoms disappear, but the vesicles frequently run on to troublesome ulcerations, which, however, are relieved without inflicting any permanent injury. When the disease is far advanced in the cow, it produces on the milkers inflammation and ulceration, which are not the genuine cow pock. It should also be mentioned, that persons have been affected from milking cows with eruptions on the hands and arms, attended by general indisposition, and yet have taken the

* Exceptions to this law are to be found in the Wertemberg reports. A cow in calf for the first time had the complaint in a genuine form—another occurred in a cow not milking; and a third, in a two years old heifer.

small pox afterwards; from which we learn that these animals are affected with eruptions, which possess no anti-variolous power. Great caution is necessary to distinguish them from the true disease, when we are to procure lymph from the cow for future vaccinations. They are much milder; are without the bluish or livid tint which characterizes the genuine cow pock; the surrounding inflammation, if any, is much less, they are not by any means so infectious, and they never put on a phagedenic appearance, but quickly end in scabs.

In the year 1758, Doctor Layard published in the Philosophical Transactions an account of a contagious pustular distemper, which raged, with the most fatal results, among the horned cattle in England, France, Italy, and other countries, a century ago, and which bore a great analogy to small pox. It never attacked the cattle a second time, whether the infection was communicated in the ordinary way or by *inoculation*, which was then practised by some persons to render the disease milder. The disease continued to appear occasionally in England, till about the year 1769, when it became so destructive, that George the Third thought it necessary to introduce the subject in his speech at the opening of Parliament, on the 9th of January, 1770. Such was the malignant character of the epidemic among the cattle, that his Majesty earnestly recommended the immediate, and most serious attention of Parliament to this very important subject. Dr. Layard was called on by Government, to assist with his advice towards stopping the progress of the contagious distemper among the cattle. Inoculation was tried, with only partial relief, and every other expedient having failed, orders were issued to kill all the cattle, and have them at once buried, by which vigorous and salutary directions, the distemper was soon checked; and the same efficient means were used, and with the like success, in Holland, Flanders, and in Picardy, in France. It was every where

remarked that this distemper, to which the appellation *variola* was given by those who described it, bore all the characteristic symptoms, progress, crisis, and event of the small pox, and whether received by contagion or inoculation, had the same appearances, stages, and termination, except more favourably by inoculation; and with this distinctive and decisive property, that a beast, having had the sickness naturally or artificially, never had it a second time. Dr. Layard mentions no instance of the distemper being communicated to man. In 1780 the disease appeared in a mitigated form in England, and other places, and Dr. Baron thinks, and very justly, from the strain of evidence produced, "that it was the remains of this violent epizoodic that Dr. Jenner found in Gloucestershire, and which, being occasionally transferred to the milkers, secured them from subsequent small pox." There is no allusion to the facts recorded by Dr. Layard and others, to be found in the writings of Dr. Jenner, though he was engaged in his inquiries at the time Dr. Layard published his second Essay; yet he uses the term, *variola*, in reference to the Gloucestershire epidemic described by him. I think it probable, as suggested by Dr. Baron, that the increase of mortality from small pox which occurred during the latter part of the last century, and which has been attributed to the general adoption of variolous inoculation may have had some connection with the epidemic in question. True it is that small pox sometimes has been observed to prevail epidemically among the human species simultaneously with cow pock through the dairies. Thus Mr. Bree, of Strawmarket, in Suffolk, informs Dr. Baron, that during the prevalence of small pox in his neighbourhood, several dairies became affected with cow pock. The same contemporary prevalence of the diseases has been observed in other parts of England.

In Asia the disease has been observed to prevail among cows, both in its mild and more malignant and pestilential

form. In 1832, a correspondent of Dr. Baron's found it raging extensively and severely in the northern parts of Bengal, where virus taken from the cow produced in the human subject the genuine vaccine, the protective power of which was proved by testing with variolous matter afterwards.

Mr. J. Wood, of Gowalparah, in a paper published in Mr. Corbyns India Journal, for March, 1838, on "Small Pox Prophylactics," details several cases where vaccine lymph produced a disease which had the appearance of small pox. In one of the cases, that of a fine healthy native boy, five years of age, Mr. Wood was not without apprehension that it would terminate fatally, from the violence of the incursive fever, in other respects, the symptoms closely resembled those of small pox, so as to confirm the suspicion of Doctor Jenner, that the small pox and cow pock might have both first originated in the same source, and be essentially of the same nature. From various trials at different places, Mr. Wood is of opinion that cow pock is not invariably and uniformly so very safe a prophylactic against small pox in India as it has been found in Europe; and that if such instances multiply, it might be a question, whether it may not be prudent to resort to small pox inoculation at times when the cow pock assumes this dangerous and fatal form. Hence we see that a severe form of cow pock may be communicated from the animal, to the human subject; and it is more than probable that, had Dr. Layard transferred the virus in his time from the animals affected as he describes, to man, he would excite a like severe and fatal disease, instead of the mild affection we now produce by vaccinating from the cow—the result in either case depending upon the benign or malignant form of the disease in the animal from which the lymph is obtained.

As the cow pock protects the constitution against the action of small pox, so the latter prevents a person from

taking the former. So well known is this fact through the dairy countries in England, that when the disease breaks out among the cows, assistants are procured, if possible, who have had the small pox, otherwise the business of the dairy could not be carried on. Sometimes, however, *local* pustules appear on the hands of those who have had the small pox, which are attended with much uneasiness.

It does not appear that the antivariolous power of cow pock was very generally taken notice of in England, till after the introduction of small pox inoculation; before that time a knowledge of it was chiefly confined to cow doctors, farmers, &c. who did all in their power to keep its existence a profound secret, lest it should hurt the character of their milk.

When the inoculation for small pox was first practised in England, most of the practitioners engaged in it frequently experienced disappointment in communicating that disease by inoculation or otherwise, and they constantly found, that those who thus resisted the infection had previously had the cow pock.

About eighty years ago, three surgeons in England, Messrs. Fewster, Grove, and the celebrated Sutton, formed a connection for the purpose of inoculating for the small pox. In their practice, which became very extensive, they found that a great number of patients could not be infected, notwithstanding repeated exposure under the most favourable circumstances. At length the cause of the failure was discovered, by the case of a farmer whom they could not infect with the small pox, though he assured them that he had never had that disease, but told them that he had had the cow pock. This fact incited the gentlemen to inquire into the particulars of those cases in which they could not communicate the small pox, and they found that all the patients who resisted the infection of that disease had laboured under the cow pock at

some period or other of their lives. The result of their observations on this head, in an ample experience, during many subsequent years was invariably the same. And many other gentlemen, extensively engaged in variolous inoculation, have since discovered, that their want of success in infecting patients with small pox, proceeded from the same cause.

In the year 1780, a young woman, who some years before had taken the cow pock while milking cows, being desirous to know whether that circumstance would secure her from the small pox, went to the Small Pox Hospital, in London, where she was inoculated, and exposed in all possible ways to the contagion, yet did not take the disease.

A man who had had the cow pock several years before, went to the Hospital, and was inoculated with small pox, he remained there in the very midst of contagion for several weeks, but did not take that disease.

Eighty-eight years ago, a farmer who lived in Wiltshire, when he was going to London, being asked whether he was not afraid of the small pox, replied—no,—for he had had the cow pock.

In a letter dated Axminster, April 12th, 1802, from Mr. Nicholas Bragge to Sir William Elford, Baronet, we find the following communication. "It is now more than thirty years ago that I first made experiments, and proved that the vaccine disease was a preservative against the small pox, and it is, I believe, more than twenty years ago, that through the Rev. Herman Drew, I acquainted Sir George Baker, Baronet, with the observations and experiments I had made. It is twenty years ago that Mrs. Rendall, the wife of a respectable farmer, in the parish of Whitechurch, near Lyme, in Dorsetshire, inoculated herself and three or four children for it; *and those children who have long since arrived at manhood, have inoculated their friends and neighbours whenever an opportu-*

nity has offered." Many communications of a similar nature may be found in the Report of the Committee of the House of Commons, on Doctor Jenner's claims.

In the year 1767, a butcher, near Bridport, aged twenty, being informed that if he would allow himself to be inoculated with cow pock, it would preserve him ever after from taking the small pox, with which he had not been previously affected, was accordingly inoculated by a needle in two or three places on the hand. In eight days the parts inflamed, his hand swelled, head ache, and other symptoms of fever came on. He was afterwards inoculated for small pox several times, and exposed in every way to it, but did not take the disease.

Mr. Benjamin Jesty, farmer of Downshay, in the Isle of Purbeck, appeared at the Vaccine Pock Institution, London, in August, 1805, when he afforded satisfactory evidence of his having vaccinated his wife and two sons, Robert and Benjamin, in the year 1774, who were thereby rendered unsusceptible of small pox, as appeared by the exposure of all the three parties to that disorder frequently during thirty-one years, and from the inoculation of the two sons for small pox nineteen years before. He was led to undertake this novel practice in 1774, from knowing the common opinion of the country ever since he was a boy, that persons who had gone through the cow pock were unsusceptible of small pox, from himself being rendered incapable of taking that disease, having gone through the cow pock many years before, and from having known many individuals, who, after the cow pock, could not be infected with small pox. During their visit to London, Mr. Jesty and son willingly submitted publicly to inoculation—the former with cow pock, and the latter with small pox—in the most rigorous manner, but neither could be infected.

Mr. White of Bath, in a letter to Mr. Creaser, of that city, mentions the case of a labouring man, who about the

year 1780, being then a farmer's boy, had the disease communicated to him in a frolic, upon a small scratch in his hand, by one of his fellow-servants, who had gotten it by milking a cow. He has since been repeatedly inoculated without effect: his family have had the inoculated small pox around him, and he has more than once been exposed to the most malignant species of that disease without any sort of effect being produced upon him.

About the year 1782, when Dr. Archer was physician to the Hospital for Small Pox Inoculation, Catherine Wilkins, from Crichlade, in Wiltshire, who had had the cow pock in consequence of milking cows, came to her brother in London, who, being desirous of ascertaining whether this circumstance could be depended upon as preventive of the small pox, sent her to the hospital for inoculation, where she was inoculated with variolous matter by the doctor, against which, however, she was proof.

In the year 1787, when there was a general inoculation for the small pox, at Wincaunton, in Somersetshire, a young woman was twice inoculated without effect. The failure she attributed to her having had the cow pock some years before.

The failure so often remarked of communicating small pox to blacksmiths by inoculation must have arisen from their previously having been infected with the equine pock, in dressing the horses' heels labouring under that complaint.

In some parts of this kingdom, particularly in the county of Cork, the cow pock, under the name of *Shinach*, has for ages been esteemed a perfect preventive of small pox, so much so that old women have been in the habit of bringing children to the neighbouring dairies to have them infected with it. Dr. Barry, of Cork, gives many instances of persons having had the cow pock more than fifty years before; and informs us that one woman, aged eighty, asserted that as long as she could remember, an opinion

prevailed, that those who have had the cow pock cannot take the small pox, and that people purposely exposed themselves to the former under that persuasion.

Dr. Huston, of Colerain, an eminent practitioner of long standing, and one of the earliest and most zealous promoters of vaccination in Ireland, has communicated to me the following facts by letter :—" Before Dr. Jenner's discovery of cow pock, I met with two mothers of families who had not had small pox, and when inoculating their children, I inoculated the mothers also. All the children passed through the disease regularly and safely, but nothing took place in the mothers but a trifling local affection ; and since the discovery of cow pock I have met with many females who never had small pox, and I inoculated several of them with small pox infection, and in every one of them only local affection was produced ; and I was, in several instances, able to trace this unsusceptibility to their having, several years before, contracted infection from the cow, in their hands in milking." The Doctor adds—" I believe that almost all the female cases here mentioned were owing to cow pock in milking, for few men escaped small pox."

A gentleman from the county of Wexford, in 1804, informed me of three women, who thirty years before, in consequence of milking cows affected with sore nipples, were attacked with considerable inflammation of their hands attended with much pain ; they were then very young, and never had the small pox, and although they were repeatedly since exposed to its contagion, they did not take the disease. Some time ago on reading an account of the cow pock, as affecting the hands of the milker, they immediately recollected the similarity between it and the disease they formerly took from the cows, and are now satisfied that it was the cow pock they then laboured under, and that their escaping the small pox ever since is to be attributed to that circumstance. A fourth

woman engaged in the same dairy, who previously had had the small pox) did not take the disease, though she repeatedly milked the cows ill of it. While writing these sheets, 1805, I have been favoured with a letter from the same gentleman, by which I find that the cow pock has been long known in Wexford and the adjoining counties, where it is called *punthans* or *puncthane*, and is esteemed a certain preventive of small pox: it has also been observed among the cows in the neighbourhood of Dublin.

Cow pock has been discovered in the Dutchy of Holstein, (under the name of *finnen*) and in other parts of Germany; and it is said that children have been long since inoculated with it in that part of the world, to preserve their beauty. In the Dutchies of Holstein and Sleswick, where it has been known for generations as a protective against small pox, it frequently appears as an epidemic among the cows, like small pox among the human species, but does not affect the horses, oxen or sheep there, being confined to the milch cows. Three or four kinds are mentioned, but only one, the *blue cow pock*, is considered genuine. Country people were long in the habit of inoculating themselves by simply scratching the hand, and rubbing in fresh matter from the cow, by which they escaped the small pox, which was often epidemic. In 1792, a schoolmaster inoculated some children, and they all resisted small pox. There are several well authenticated instances of persons in Holstein having the cow pock during infancy, remaining ever after free from small pox—Dr. Sacco, of Milan, found it to exist in Lombardy. It has been observed among the cows in the neighbourhood of Berlin, in Lunenberg, Wertemberg, Holland, Switzerland, Italy, Piedmont, and in France; Dr. Waterhouse informed Dr. Jenner of its existence in several parts of America, where its antivariolous power is not unknown. "At one of our periodical inoculations," says Dr. Waterhouse, "which occur in New England

once in eight or nine years, several people drove their cows to an hospital, near to a populous village, in order that their families might have the daily benefit of their milk. These cows were milked by persons in all stages of small pox, the consequence of which was, the cows had an eruptive disorder on their tits and udders, so like small pox, that every one in the hospital, as well as the physician who told me, declared the cows had the small pox." Thus the human small pox was conveyed to the cow just as the cow pock is communicated from the cows to the milkers in dairy countries, and the statement is strongly confirmative of the doctrine of the identity of small pox and cow pock. Don F. Xavier Balmis, Director of the Spanish Vaccine Expedition, discovered cow pock on the cows of the Valley of Allixico, near the city of Puebla de los Angelos, in the neighbourhood of Valladolid, in Mechoachan, and in the district of Calaboza, in the province of Caraccas, and in the Peruvian Andes. We are informed by M. de Humboldt, in his Political Essay, on the Kingdom of New Spain, that vaccination was commenced at Lima, in Nov. 1802, the small pox then raging on the coast of the south sea. In the course of this epidemic, a negro slave had been inoculated with small pox without effect. They were about to repeat the operation, when the young man told them that he was certain of never taking the small pox, because on the Andes, he had had a cutaneous eruption, caused, as he said, by the contact of certain tubercles, sometimes found on the udders of cows. Those who have had this eruption, said the negro, never take the small pox.

Cow pock has also been found to prevail in many parts of France, as we are informed by Dr. Moreau, from whom we also learn that several persons inoculated with virus discovered at Milan, proved unsusceptible of small pox. M. Tournier, first surgeon of the military hospital at

Brussels, says, that it exists among the cows in Belgium, and that the peasants of Campine have assured him, that it attacks the cows in those places, and that such persons as take it are thereby rendered unsusceptible of small pox. It has been long known in Persia, where its protective powers are, we are told, known to the country people.

The first allusion to cow pock on record is noticed by Dr. Jenner, in a letter to Mr. Ring, "When the Dutchess of Cleveland," said he, "was taunted by some of her companions, that she might have to deplore the loss of that beauty which was then her boast, (the small pox at that time raging in London) she made a reply to this effect—that she had no fears about the matter, for she had had a disorder, which would prevent her from ever catching the small pox." The author from whence this intelligence was derived, could not be recollected, but Dr. Jenner is disposed to believe that it alludes to cow pock.

In a weekly paper, published at Gottingen, in 1769, we find the following communication: "The cow pock is not uncommon in the neighbourhood of Gottingen, it is true, that neither men nor animals die of this disease, though it is said to be pretty severe in some persons, which may be ascribed to our climate being colder, and thus rendering the poison less venomous and dangerous: on this occasion I shall mention, that people in the country near Gottingen, who have had the cow pock, flatter themselves that they are by it quite secured from the infection of our common small pox, as I have, upon accurate inquiries, frequently heard from creditable persons." This paper is signed, "An Experienced Husbandman."

There is reason to believe that cow pock protects quadrupeds, as well as the human species, against small pox. According to the experiment of Citizen Bannier, a veterenary surgeon of Chartres, in France, and those of Dr. Sacco, of Milan, it appears that dogs, as well as oxen,

sheep, goats, &c., are susceptible of small pox—Dr. Sacco inoculated with small pox five dogs, which had been previously vaccinated, but without effect.

In the south of Scotland, cows were long known to be subject to an eruptive complaint on their teats and udders, called *udder clap*. The following may refer to cow pock:

"Anno 570. Hoc anno morbus validus cum profluvio ventris et variola Italiam, Galliamque afflixit. Et animalia bubalia per ea loca maxime interierunt."—*Chronicles of Bishop Marins, of Lausanne.*

Notwithstanding these and many other facts of a similar nature, (which may be found in the works of Jenner, Woodville, Pearson, Ring, &c.) the cow pock remained for the most part unobserved by medical men, till Dr. Jenner,* the distinguished author of this grand improvement in the healing art, astonished the world in the year 1798, with his very interesting "*Inquiry into the Causes and Effects of the Variolæ Vaccinæ, &c.*" Dr. Jenner, during his apprenticeship at Sodbury, in Gloucestershire, about the year 1760, being often applied to for the relief of eruptions on the hands of milkers, which they contracted from the cows, whose teats were affected with similar eruptions, and being assured that those who were so infected remained ever after free from variolous infection, he directed his attention to the subject, and never after lost sight of it till he fully established and perfected his discovery of vaccination. In 1770 he mentioned it to Mr. Hunter, of London, and some time afterwards proposed vaccination

* Accounts of the casual cow pock had however, been published prior to this period, for besides those already alluded to, we have the following—"The cow pock is a disease well known to the dairy farmers in Gloucestershire. What is extraordinary, as far as facts have hitherto been ascertained, the person who has been infected is rendered insensible to the variolous poison."—*Vide Adams on Morbid Poisons*, 1795.

"I have learned from my own observation, and the testimony of some old practitioners, that susceptibility of the small pox is destroyed by the cow pock, a disease from cows, which is a malady more unpleasant than dangerous."—*Vide Beddoes Queries*, 1796.

as a substitute for small pox inoculation. In 1798, the Doctor sent the result of his observations and experiments to the President of the Royal Society, for publication in their Transactions, in the full assurance that a communication of such great importance would be well received; but he was much disappointed by an intimation to the effect, that it would not be advisable to present his paper to the society, lest it should lessen the credit he had already acquired by a former publication. This unexpected rebuke annoyed, but did not deter him from prosecuting his inquiry; and having made some further experiments, he published his "*Inquiry into the Causes and Effects of the Variolæ Vaccinæ*," which quickly attracted public notice, and excited much discussion among medical men. Some enthusiastically adopting Dr. Jenner's views, others with less reason condemning the whole, as untenable and absurd. Mr. Cline, of London, however, prudently withheld his opinion till he had an opportunity of testing the truth of Dr. Jenner's doctrine. A child, who never had the small pox, being in St. Thomas's Hospital with hip joint disease, afforded a favourable occasion for an experiment with cow pock, especially as it was of importance to protect so delicate a subject from small pox, which was then prevalent; and it was suggested that some inflammation on the skin might benefit the joint. Vaccine lymph being inserted by a slight scratch over the hip, the true vaccine vesicle was formed, which proved effectual, as Mr. Cline afterwards subjected the boy to small pox inoculation, but without effect. This, with other similarly successful trials, all proved favourable to Dr. Jenner's views.

Though it was at this period well known, that Dr. Jenner had been already engaged nearly twenty years in prosecuting his inquiry, Dr. George Pearson unexpectedly came forward to claim participation with the Doctor in the honour of the discovery, in which, however, he failed;

and having joined Dr. Woodville, at the Small Pox Hospital, where the most incorrect and unjustifiable experiments were carried on; in which, children being exposed at the moment of vaccination to small pox, were afterwards seized with violent fever, followed by eruption of pustules over the body. These symptoms, so unlike the mild character of cow pock, were unjustly attributed to it, and tended to raise a very unfavourable impression of vaccination, whereas they arose from the small pox infection, to which the children had been exposed at the time of vaccination; and it was well known that several, who supposed they were getting cow pock infection at the small pox hospital, were, in fact, getting small pox matter; thus they propagated the latter disease, and not cow pock, as was afterwards satisfactorily proved. Dr. Jenner, by a well directed course of experiments, proved the inestimable advantages which society were to expect from cow pock, by applying it to the purpose of inoculation: and also that it may be communicated, *ad infinitum*, from one human subject to another, without losing its antivariolous property, and that thus a general inoculation for cow pock would supercede the small pox, and eventually succeed in eradicating that most malignant disease. He inoculated several persons with small pox, who had previously undergone the cow pock, some thirty and even fifty years before, but they all resisted the former disease. The perfect mildness of the cow pock has likewise been proved by Dr. Jenner, and also that it is not contagious by effluvia.

At an early period, Doctor Jenner supposed that cow pock was not generated in the constitution of the cow, but was excited in her by the accidental application of a thin acrid matter, which issued from the heels of the horse labouring under a disease called the *grease*. It is well known that in the dairy farms throughout England, men servants generally assist in milking, who at the same time have the charge of the horses. Dr. Jenner thought that

one of these men, proceeding to milk, immediately after having dressed the heels of the horse, conveyed from the horse's heel to the teats of the cow some of the matter of the grease, which, under certain circumstances, produced in the cow a pustular disease termed cow pock. He considered that the matter of the grease, in passing through the cow, from the horse, acquired the antivariolous property. In 1801, Dr. Loy, of Aislaby, published an account of some experiments he made. With limpid matter that issued from the heel of a horse affected with the grease, he inoculated a cow on the teat; in a few days a vesicle formed, containing a large quantity of a watery fluid, with some of which he inoculated a child, who, in the usual time, exhibited a well marked vaccine vesicle. This child was afterwards inoculated with small pox matter, but without effect. Dr. Sacco, of Milan, inoculated several children with the matter of grease, in whom it produced the genuine vaccine vesicle. Dr. De Carro, of Vienna, Dr. Friese, Director of Vaccination in Silesia, and Dr. Lafont, of Salonica, in Macedonia, tried similar experiments, and with the like result. The horse, from whom Dr. Lafont took his infection, had four little ulcers on the heels, legs, and breast, and eruption of pimples similar to the small pox. It is satisfactory, and indeed gratifying to know, that Dr. Jenner lived to correct the error into which he and his followers had fallen, with respect to the disease in the horse, to which he attributed the origin of cow pock. It is now known, that horses are subject to a vesicular eruption, chiefly about the heels, but sometimes on other parts of the body and limbs, similar in its nature to cow pock, and is found capable of generating the true vaccine disease in man, or in the cow, by inoculation. "It is ascertained," says Dr. Baron, "that "the horse is liable to a vesicular disease of a variolous "nature, as well as the cow, and that lymph, taken from "the horse and inserted into man, will produce an affec-

"tion, in all respects, like that derived from the cow, "and equally protective. The error consisted in believing "that this affection was the grease, and that it required "to be transmitted through the cow to give it efficacy. "A misapprehension of this kind may well be excused in "the infancy of so complicated an investigation. The dis- "ease appearing, for the most part, on the thin skin of the "heels of the horse, and traditions among the farriers in the "country leading to the mistake. We now know that the "vesicle may appear on other parts of the animal's body, "and that the horse, as well as the cow, has, in different "ages and in different countries, suffered both from the "mild and malignant *variola*." Dr. Barron, in the appendix to his Life of Jenner, p. 499, corrects the error into which he had fallen in using the word grease, in alluding to the disease in the horse; *variolæ equinæ*, is, he says, the proper designation, which is a vesicular disease, sometimes diffused over the body, and not confined to the heels like the grease; the two diseases have no connexion with each other, though they often co-exist. A coachman in this city lately having rubbed his face, upon which there were some recent scratches, with a sponge, which, the moment before, had been applied to sores on the heels of a horse, became sick and feverish, complaining much of his head; and in a few days exhibited over the face vesicles of a bluish colour, surrounded by considerable erysipelatous inflammation. Unfortunately I did not see the case till a late period, but the vesicles were similar, in many respects, to the vaccine affection. The man was not certain of his ever having had small pox or cow pock.

Late researches have thrown most important light on the subject of cow pock; and we now, I think, possess conclusive evidence of the correctness of Dr. Jenner's views on the identity of cow pock and small pox, the knowledge of which cannot fail to remove all remaining prejudice against vaccination, and fully establish the confidence of the public in the practice.

There are numerous facts on record which prove that, from time immemorial, an eruptive disease has existed among cattle in various parts of the globe, chiefly affecting cows, horses, sheep, and goats, similar to small pox in the human species, and designated in some places by terms analagous to *variola*—that this disease has prevailed epidemically among the inferior animals, with various degrees of severity, simultaneously with epidemic small pox among men—that by propagating it by inoculation from one animal to another, it is rendered milder, as in the case of inoculating one human subject from another—that infection taken from a cow labouring under the disease severely will produce in man a severe disease—that human small pox may be communicated to the cow in the same manner as cow small pox is communicated to man in the Gloucestershire dairies and other places—and that by inoculating a cow with human small pox, a mild disease is produced in the animal, infection afforded, by which will, by inoculation, produce in the human subject a disease exactly similar, in every essential part of its character, with the true cow pock as described by Dr. Jenner: "Thus irresistibly proving," says Dr. Barron, "his "fundamental proposition, that cow pock and small pox "are not *bonâ fidê* dissimilar, but identical; and that the "vaccine disease is not the preventive of small pox, but "the small pox itself—the virulent and contagious disease "being a malignant variety."

It is stated in the 25th vol. of the Asiatic Journal, dated February, 1828, on the authority of a letter from Mocha, that the vaccine matter having failed a short time before in Egypt, in a great many instances, medical men were led to institute certain experiments, by which it was discovered, that by inoculating a cow with small pox matter from the human subject, fine active vaccine virus is produced. At the time the letter was written, there was a Greek child at Mocha that had been successfully

vaccinated with matter direct from the cow, produced as above mentioned, and the virus taken from its vesicles had acted with the best effect on several other children at Suez, where former attempts had failed.

Dr. Sunderland, of Bremen, attempted, in 1831, to variolate a cow, by covering the animal with a blanket taken off a patient's bed who had died of small pox, but with no satisfactory result. Similar attempts were made by others, but they failed.

In 1836, Dr. Thiel, of Kasan, in Russia, had a cow inoculated with small pox; the operation succeeded, and several children being inoculated with the matter thus generated in the cow, vesicles were produced of the true vaccine character; from which three thousand individuals, by successive inoculations, were vaccinated. The Doctor repeated the experiment in the spring of 1836, with the like success; and the following direction was given for conducting the operation—the cow to be a recent milker, with a white udder, and between four and six years old; to be kept in a warm place, fed as usual, and milked regularly; the hair should be shaved off, and the recent variolous matter inserted in the posterior part of the udder, by four or five incisions, made deeper than for inoculating for cow pock, and the part to be bound up. The greater or less severity of the case from which the infection is taken, has not, in the Doctor's opinion, any material influence upon the vaccine disease produced. On the third day, the inoculated cow exhibited, at the part of insertion, hardness; and on the fifth, a vesicle with a central depression resembling the vaccine, was formed, which, from the seventh to the ninth day contained a clear lymph; from the ninth to the 11th day it began to dry up, and a crust formed, which, on falling off, left a small smooth cicatrix. The cow had increase of heat, and acceleration of pulse between the fourth and seventh days. The vaccinated children presented the usual appearance of

genuine cow pock, differing only in being more intense in the first inoculations. Many efforts were made in England to communicate small pox from the human subject to the cow by inoculation, but all failed, till Mr. Ceely, of Aylesbury, commenced his very interesting experiments on the 15th of February, 1839. Mr. Ceely inoculated a heifer with human small pox by eight punctures; on the fifth day, four of the punctures were large and elevated, the other four were less so: on the sixth day, all presented the character and appearance of the genuine vaccine vesicle; from one of which lymph was taken on the sixth, eighth, ninth, and tenth days, which, being inserted into the arms of children, produced, especially that of the eighth day, the true vaccine vesicle. Many hundred patients were successfully vaccinated from this source; the efficacy of the lymph being afterwards fully tested by inoculation and exposure to infection of small pox; both of which it resisted. Mr. Ceely obligingly sent me lymph in August last year, twenty-five removes from the above case, with which I inoculated twelve children at the Cow Pock Institution, of whom four had regular vaccine vesicles, which ran the usual course. In three the cow pock appeared slow and subdued; in two the insertion of the lymph produced no effect, and the remaining three, living at a distance, were not brought back for examination. This lymph, in passing through five removes, preserved the standard appearance of genuine cow pock.

Dr. Pring, of Dresden, has proposed *retrovaccination*, or the production of cow pock in the cow, by inoculating with vaccine lymph taken from the human subject; the principal alleged advantage of which is, the supposed restoration of the vaccine lymph to its original purity, and efficiency as a preventive of small pox, by the transference of the lymph to the cow. The Doctor considers that the lymph thus attains renewed efficiency as a preventive of

small pox. He is of opinion, with many others of the present day, that the lymph is gradually deteriorated by frequent transmissions through the human subject; an opinion by no means sanctioned by many years' experience of the Cow Pock Institution: but I should not expect much advantage from transmitting weakened or deteriorated vaccine lymph through the cow. I am satisfied that if due attention be paid to the directions given in this publication, the integrity of the vaccine lymph will be preserved for ever.

No sooner was the discovery of cow pock promulgated, than it attracted the attention of the most eminent of the faculty; trials were instituted with impartiality in all quarters, to determine the truth of Dr. Jenner's positions. Thousands of those vaccinated were inoculated with small pox, and exposed to it in every posible way without effect; they were put to sleep with children ill of the disease, made to wear their clothes, and many were wrapped up for hours in sheets, which had just been taken off the beds of patients labouring under the most confluent small pox, but all escaped. These trials proved highly flattering to Dr. Jenner and his discovery.

In 1807, the Royal College of Physicians, of London, being directed by His Majesty, at the request of the House of Commons, to inquire into the state of vaccination, they immediately proceeded to collect information upon the subject, by applying separately to each of the Licentiates of the College, and corresponding with each of the Colleges of Physicians and Surgeons of Edinburgh and Dublin, and the College of Surgeons, of London—also calling upon the societies established for vaccination, for account of their experience; and inviting individuals to contribute whatever information they had severally collected. Having thus obtained such a mass of evidence as enabled them to speak with confidence, they drew up a most satisfactory Report, which they concluded in the

following words—" From the whole of the above considerations, the College of Physicians feel it their duty strongly to recommend vaccination. They have been led to this conclusion by no pre-conceived opinion, but by the most unbiassed judgment,—formed from an irresistible weight of evidence which has been laid before them. For when the number, respectability, the disinterestedness, and the extensive experience of its advocates, are compared with the feeble and imperfect testimonies of its few opposers, and when it is considered, that many, who were once adverse to vaccination, have been convinced by further trials, and are now to be ranked among its warmest supporters, the truth seems to be established as firmly as the nature of such a question admits; so that the College conceives, that the public may reasonably look forward, with some degree of hope, to the time when all opposition shall cease, and the general concurrence of mankind shall at length be able to put an end to the ravages, at least, if not to the existence, of small pox."

The Provincial Institutions of France, too being ordered to report to Government on the state of vaccination in their several districts, affirmed that of 2,671,662 subjects properly vaccinated in France, only seven cases appeared of patients having small pox afterwards. The Report concludes with a confident hope that small pox will ultimately disappear from society.

Names without number were daily added to the list of converts to the new practice, and testimonials in its favor were pouring in from all parts; still, however, it was not to be expected that the Jennerian discovery should, unlike all other innovations, escape the effects of scepticism, interest, and prejudice. Plots were, therefore, perfidiously contrived, vague reports and absolute falsehoods industriously circulated, and every artifice devised to injure it in the minds of the public. Happily, however,

for millions yet unborn, these base subterfuges, by promoting a spirit of inquiry, established the truth of a doctrine which it was their object to nip in the bud.*

I may here be permitted to quote from Dr. Baron's Report a few testimonies of a late date, furnished by gentlemen from different parts of England, in answer to queries circulated by the Medical Association, on the subject of vaccination.

"We have," says the Report, "a statistical table drawn up by Dr. Gregory, of the Small Pox Hospital, in London, stating that in that hospital, 103 patients have died of small pox after vaccination, between the years 1820 and 1839 inclusive. We enter upon the consideration of this statement with great sorrow and reluctance. Coming from so high an authority, it is calculated much to deaden our fond anticipations of the benefits derivable from vaccination; while at the same time it calls upon us to endeavour to find out any facts that may tend to allay our apprehensions. The total number of deaths, reported by all the gentlemen who have answered our questions, throughout nearly the whole of England, amount to very little above thirty. Again, we have authority of gentlemen, who have been engaged in the practice of vaccination, from its commencement down to its present time, who have never met with any instance of this kind. The excellent Mr. Dunning, of Devonport, the friend of Jenner, and one of the most scientific investigators of vaccination, thus wrote to a member of the section a few months ago:—'Dining at the last quarterly meeting of a medical society, established in these towns, (i. e. Plymouth and Devenport) nearly half a

* An assistant apothecary in London was paid, as he afterwards confessed, by the celebrated anti-vaccinist, Dr. Rowley, for finding out adverse cases; he forged names, residences, diseases, &c. Similar attempts to decry cow pock were made in Prussia by Doctors Ehram and Hertz.

century ago, and of which I am now the only original member remaining, (present fifteen members) and hearing them eagerly inquiring for some of *the pearl upon the rose*,* I said, Gentlemen, I have to ask you all one straightforward question—how many fatal cases of small pox after vaccination have you met with in your respective practices? unhesitatingly and loudly all replied, 'Not one.' We have expressly similar evidence from many towns in Gloucestershire—towns, too, where small pox has often appeared, but has never proved fatal to one vaccinated person. More than two-thirds of the gentlemen who have favoured us with their experience, have not met with any case of this kind; one mentions seven, five of which were presumed to be *after perfect, and two after imperfect vaccination.* Six mention two; sixteen mention one, and one of these were uncertain. The period to which some of these answers apply, extends nearly to the commencement of the practice.

"Mr. Ceeley, to whom we are so much indebted for valuable information on the subject of variolæ vaccinæ, tells us that cases of small pox, after vaccination, were rather more frequent in those long since, than in those recently vaccinated; but that cases occurred from one and a half to thirty years after vaccination. He adds that the modification in those which had been vaccinated, twenty-two, thirty, and thirty-two years, was quite as great, or even greater, than in those who have been vaccinated only one and a half, or two and a half years.

"Within the last three years, he mentions small pox as unusually prevalent. There were 28 deaths last year in Aylesbury, but not one of those occurred after vaccination. Mr. Ceeley observes that the influence of vaccination in wholly preventing small pox in a great majority of

* Dr. Jenner's figurative description of the vaccine vesicle.—*Vide Baron's Life of Jenner, vol. II, p.* 309.

cases, and, where it failed to protect, in rendering the disease infinitely milder, was so palpable, as to compel the most prejudiced, and the lower classes in general, to recognise its value, and readily to seek its influence.

"Our Secretary, Mr. Dodd, mentions 201 cases of small pox as occurring in the year 1837. Of these 114 were after reputed vaccination; ninety-one cases were mild, twenty-three were severe, and two were fatal. Of the eighty-seven unvaccinated persons, twenty-nine cases were mild, fifty-eight were severe, and seventeen fatal.

"He also gives an account of 101 cases which had been vaccinated, and subsequently had small pox, with a view of illustrating the periods that elapsed between vaccination and seizure by small pox; from which it is shown that the greatest number occurred after a period of one year, namely, nineteen; whereas, on the other hand, the number of failures seems to diminish with time. In connection with this subject is another statement of sixty-five cases that had been vaccinated, and subsequently exposed to small pox, both by inoculation and effluvia. The period of exposure varied from one year to thirty-four, and the disease was resisted by the whole. Though Mr. Dodd mentions so many cases of small pox after vaccination, it is proper to add that he has *not seen a single instance of small pox in a patient whom he had vaccinated, though he had resided at Chichester ten years.*

"We will next advert to the reports from the vaccinators of the national establishment, including their experience from the year 1825 to the year 1832. In that period 83,646 patients were vaccinated at the different stations. Among the whole of that number, only two cases of death from small pox, after vaccination, are mentioned, and one of these was of a very doubtful nature. The patient, Sophia Wallis, was vaccinated May 10, 1829, but was not in attendance afterwards for inspection. The mother reported that one spot arose on one arm, and attained its

utmost height on the third day, and this circumstance is sufficient to prove that the process must have been incomplete. The other cases of small pox, after vaccination, mentioned in the report, are very few, and the majority occurred in persons who had been exposed to variolous influence previous to infection. Another very interesting document is found in the same report; it contains a return of the children admitted into the Royal Military Asylum at Chelsea, from the commencement of the institution in August, 1803, to August, 1833, and specifies the number who had undergone vaccination, small pox, varicella, &c. Those reputed to have had small pox previous to admission were 2,532—1,887 being boys, 645 being girls. The number reputed to have been vaccinated before admission were 3,060—viz. 2,498 boys, and 562 girls. Those who had small pox after reputed small pox, were twenty-six—15 boys and 11 girls. The cases of small pox after reputed vaccination, were 24—19 boys and 5 girls. The total vaccinated at the Asylum subsequent to admission, were 628—viz. 460 boys, and 168 girls. Of the whole, only two boys and one girl caught the small pox. Five deaths occurred—four boys and one girl. Of these five children, three had the disease after reputed small pox, and two had neither been vaccinated, nor had undergone small pox before. We regard this document as one of the most important that has appeared in this country, It very fairly tasks the qualities both of small pox and cow pock. All the patients were placed under exactly similar circumstances, and what is the result? A greater number of cases of small pox followed small pox than vaccination; and of the five fatal cases, three were after small pox, whereas not one occurred after vaccination. This convincingly shows what may be done by cautious and prudent management, and on that account deserves the serious attention both of the profession and the public. These statements are in

accordance with the experience of the majority of our correspondents. We cannot pass by this division of our inquiry, without referring to the experiments and opinions of Dr. Sacco, of Milan, unquestionably the greatest vaccinator in the world. He, a few years ago, inoculated with small pox a considerable number of individuals who had been vaccinated from six to twenty-four years, and he found that they all resisted the disease. To this may be added the testimony of Dr. De Carro, of Carlsbad, formerly of Vienna, one of the earliest and most distinguished promoters of this discovery on the Continent."

Some years ago, a Director of the Cow Pock Institution in Dublin attended two adult ladies, who had been inoculated during infancy, one with small pox, the other with cow pock; both were seized, nearly about the same time, with confluent small pox. In the vaccinated patient, appearances were at first very alarming; but on the 11th day, there being no secondary fever, the pustules on the face suddenly scabbed, those on the limbs ceased to enlarge, and dried up, and the patient escaped with very slight pitting of the skin. In the other lady the disease ran its full course, with secondary fever; her recovery was slow, and for a time doubtful, nor did she escape without considerable pitting of the skin.

It may be interesting to insert here, an extract of a letter which I received from Dr. Jenner in 1811, in answer to one I addressed to him on the case of the Hon. R. Grosvenor:—

"The Honourable R. Grosvenor, son of Lord Grosvenor, was vaccinated by me in the year 1801. He has lately (according to my judgment, though it has been doubted by some) gone through the small pox. On the face and limbs it was nearly confluent; the body had scarcely a spot upon it. The pustules did not go through their course in the usual way, but desiccated more quickly. The impression is left upon the countenance, but it is

just as smooth as it was before the small pox appeared; so that, although the disease threatened destruction, yet it was deprived of its mortal sting by the previous vaccination. This is the first case of failure I have met with in my practice, which, when I consider the vast numbers into whose arms I have inserted vaccine lymph, I cannot but consider as almost miraculous; for why should we consider the cow pock as a more certain means of security than the small pox? And it need not be told to you what a great number of cases are upon record of small pox, after supposed security from the disease, either from inoculation or casual infection; and very fortunately no less than four have started up all at once—one of them in a family of distinction; and this coincidence has silenced the clamour which, most absurdly, was raised up on account of Lord Grosvenor's son. This case will finally be productive of much advantage. It will set the people thinking, and the employment will convince them of what I hitherto, in vain, have been attempting to make them comprehend, that the cow pock, like the small pox, may be fallible. I heartily agree with you in wishing to see some measure adopted by the legislature for rendering vaccination more general. I think it suffers more from the apathy of the people, than any other cause. I will give you an example. In the city of Chichester, the small pox, through the activity of the medical men there, had been banished for many years. The populace grew heedless, and for a great length of time neglected to secure their children. While things were in this state, some kind hearted old woman, for a small gratuity, was good enough to set about inoculation, and a most destructive epidemic followed. However, it was productive of some good among the general evil; it exhibited this remarkable fact, *many persons who, at different periods, had gone through the small pox, had the disease again, but not one of those who had been previously vaccinated.*"

"It has been remarked in surgery, and in other practical professions, that attempts at improvement are considered by timid persons as hasty and unwarranted innovations. This caution, when properly limited and applied, may answer a good purpose, by inducing men qualified for the task, to examine with accuracy and deliberation into the improvements proposed, and prevent the obtrusion of those which will not bear the test of rigid inquiry. For a man to condemn or approve hastily, without a previous knowledge of the subject, nothing else is required than a common stock of prejudice; but to form a correct and independent opinion, sometimes calls for more judgment and firmness than many possess; and to appreciate the treatment recommended for an intricate disease, demands greater opportunities and skill than fall to the lot of every practitioner."

All new discoveries which tend to overturn long established theories, must have the same difficulties to contend with. In no case was this more remarkable than with respect to small pox inoculation, which, when introduced into England, had many enemies to encounter. Exertions were made use of in the pulpit, to deter the public from adopting it. Such opposition was excited, and such outcry raised against it, that it absolutely fell into disuse for some years. It was not countenanced by the College of Physicians for more than 30 years after its introduction. The cow pock has met with a much more favourable reception, for no sooner were its merits made known by Dr. Jenner, than the most eminent men throughout Europe turned their attention towards it; and I may now state with confidence, that there is not to be found a man, who, being entitled from a careful examination of the subject, to advance an opinion, is not a decided friend to the practice.

In the infancy of vaccination, as well as in that of every other similar discovery, mistakes must occasionally be

expected, until we become perfectly acquainted with its true character, &c. Whoever will take the trouble of looking into the history of small pox inoculation, will find many more cases of failure recorded than have been attributed to cow pock; yet we do not find that the efficacy of small pox inoculation is now called in question. The celebrated Tissot, we are informed, having inoculated a favourite child, was satisfied with the appearances which followed, and therefore objected to a second inoculation; unfortunately, however, the child afterwards took the small pox in the natural way, and fell a victim to it. In a pamphlet published in the year 1746, by Doctor Pierce Dodd, of London, we find two or three remarkable cases where the small pox was said to have appeared in the same person twice—viz. after inoculation pustules came out to the number of from 60 to 100; they maturated and scabbed regularly. However, in two or three years afterwards, being exposed to the infection, they again took the disease, and had a copious eruption of pustules, which likewise maturated and scabbed regularly.

Mr. Ring mentions a gentleman who inoculated the inhabitants of two or three villages with variolous matter, as he supposed, in consequence of which an eruptive fever and a mild form of disease, resembling small pox, made its appearance at the usual time; but after these people had been well some months, one half of them nearly took the small pox by contagion, and some had it very unfavourably. He quotes from the Memoirs of the Medical Society of London, a similar instance of failure. I myself have met with such cases.

A respectable country practitioner, of many years experience in the practice of inoculation, infected two children, sons of a particular friend and relation of his, with small pox, as he supposed, and which he was satisfied they took and went regularly through. Some time afterwards these children were brought to Dublin, where they were

attacked with fever followed by an eruption, which the physician who was called in, pronounced to be the small pox. The possibility of this being the case was denied by the father, who assured the Doctor that they had already been inoculated, and had had the disease in a satisfactory manner. This report was confirmed by the practitioner in the country, who alleged that the subsequent complaint must be the chicken pock; it proved, however, to be the small pox, and of a very bad kind.

Having already admitted that vaccination occasionally fails to protect the constitution against small pox, I think it not irrelevant here to adduce proofs of the fact, that small pox, whether produced by inoculation or casual infection, does not always protect the individual from a future attack of that disease; an occurrence, however, which was denied by Van Swieten, Meade, and others, and is still questioned by some, notwithstanding a host of recorded evidence on the subject.

Louis the Fifteenth of France died of a second attack of small pox when 64 years old. Dr. Jenner records the case of the surgeon of the South Gloucester Militia, who was so susceptible of the variolous infection, that he never attended a patient in small pox without suffering an attack of that disease. And he says elsewhere, (vid. Willan. p. 75,) "In three districts in the county of Gloucester, embracing a circle of about 20 miles, I can engage to produce a very considerable number of well authenticated cases of small pox, which occurred at different periods after small pox inoculation." The child of Dr. Baron's cousin was successfully vaccinated in India apparently; afterwards in England received the infection, and subsequently was inoculated for small pox, and took the complaint; and at a still later period, being exposed to the infection of small pox, took it again. Five well attested cases of small pox after small pox, are given in the correspondence of the Cow Pock Institution, published

in 1818; and several of a like nature will be found in the Appendix to this Address. Dr. Bateman has given similar cases in the 2d vol. of the Medico. Chirurgical Transactions; and he referred to others of a similar character. About 15 years ago, Dr. M'Keever attended a French lady, the wife of a British officer, in her confinement; she was deeply and profusely pitted with small pox, which she had naturally in infancy. On the third day after delivery, she was attacked with smart inflammatory symtoms, which continued unabated for three or four days, when the nature of the case became at once manifest, by the appearance of an extensive crop of small pox pustules. The disease proved confluent, and of a most malignant character. She died on the 12th day from the period of the attack. The infant was vaccinated as soon as the case developed itself, and although it was constantly in the bed with the mother, and in her arms, it escaped the disease.

Dr. Shekleton has favoured me with two well marked cases, of which he was a witness, of small pox occurring a second time. One, an old soldier in the Buffs, who was much pitted by a previous attack of the disease, but being much exposed to variolous infection, during a voyage from Bordeaux to America—the small pox having broken out among the children on board—he sickened, and to the Doctor's astonishment, confluent small pox appeared upon him, and ran a rapidly fatal course. The second case was that of Captain E——ds, A.D.C. to the Commander of the Forces here, who having had small pox by inoculation when young, of which he bore evident marks on his face and body, took the disease again twenty years after, and had it in a confluent form, and narrowly escaped with his life.

Mr. Ferguson of Kildare-street communicated to me the case of a lady who, being vaccinated when an infant, took the small pox a few months afterwards, and suffered severely from it. Last September, she being then a full

grown woman, was again attacked with small pox, in a confluent form, which proved fatal on the 14th day.

During the small pox epidemic of 1818 in Edinburgh, Dr. Thompson of that city saw 557 cases of that disease; 205 of this number had neither small pox nor cow pock previously; 41 had already gone through the small pox; and 310 had been vaccinated. Of the first number 50 died; of the second, including 30 furnished by a friend, making 71, 3 died; and of the 310 vaccinated, only *one* died. We learn from Dr. Baron's report that out of 603 cases mentioned by Mr. Crosse, of small pox occurring in Norwich, 297 had had the disease before; 91 had been vaccinated; and 200 had had no protection by previous vaccination or variolation. Of the first number 45 died; of the second, none died, all having a mild disease; and of the third the disease proved mild in all. In the Marseilles variolous epidemic of 1828, as we are informed on the same authority, there were seen 20 cases of small pox occurring a second time, and four died. A respectable correspondent of the Vaccine Section, Mr. Goolden, in 40 years practice, saw between 80 and 90 cases of small pox after small pox; many were confluent and severe, and four proved fatal. Sixty-two correspondents reported to the Section 239 cases of a similar nature; of which number 12 proved fatal. In the report of the Royal Military Asylum at Chelsea, already quoted, the proportion of cases of small pox after small pox, is much greater than of small pox after vaccination; and I feel assured it would be found on an impartial inquiry, that small pox occurring after small pox, is neither less fatal nor less frequent than small pox after vaccination.

Numerous references to well attested cases of small pox occurring a second time, are to be found in Mr. Hennen's publication on eruptive diseases, and in Burserius, *de morbis exanthematis febrilibus.*

La Condamine calculates that 1 in 50,000 is liable to a second attack of small pox; Heberden as 1 in 10,000;

Eichorn as 1 in 250!! and in the Copenhagen epidemic, one of every six attacked with small pox, had had the disease before.

Since the year 1799, vaccination has been practised in England; public institutions have been opened in London, and most of the principal towns, for the purposes of inoculating gratuitously all those that should apply, and of supplying practitioners in distant quarters with cow pock matter. Exclusive of the exertions of medical men, the clergy in several parts of England have done much to disseminate it, as well by recommendatory exhortations from the pulpit, as by inoculating many thousands themselves in their respective parishes. By orders from the Horse Guards and Admiralty, vaccination was adopted at an early period in the army and navy.

In many towns in Scotland, also, institutions have been opened for vaccine inoculation.

Its diffusion has been long universal in this country, and it is now as extensively disseminated in Ireland as in Great Britain. In Dublin, and in most of the large towns, it has been practised at the dispensaries and hospitals.

In 1800 cow pock was first used in Dublin. The late Mr. Creighton, a respectable surgeon and accoucheur, opened a Dispensary for infant, poor, and cow pock inoculation. In 1804, six medical gentlemen of eminence, three physicians and three surgeons, Doctors Clarke, Cleghorn, and Evory; Messrs Stewart, Richards, and O'Bré, foreseeing the great benefit likely to arise to society from a more general diffusion of cow pock, associated for the purposes of inoculating the children of the poor, and supplying the different parts of the kingdom with genuine infection. They applied for the sanction and aid of government, and the Earl of Hardwicke, then Lord-Lieutenant of Ireland, honored the proposed Institution with his approbation and support. The Cow Pock Institution was, accordingly, established under the patro-

nage of His Excellency; and, as was anticipated, the high character of the associated gentlemen secured to the new institution the confidence of the public. The privilege of free transmission of letters through the post office, aided materially in extending the practice, by enabling the institution to keep up a constant correspondence with medical men through the country, and supply their demands for vaccine lymph. The *experiment* having succeeded, Lord Hardwicke and his successors in the vice-royalty continued their patronage and support.*

The respectable practitioners throughout this country having, very much to their credit, relinquished small pox inoculation, a fruitful source of emolument, for the less lucrative practice of vaccination, it gained ground rapidly, and is now universally adopted at hospitals, dispensaries, and among the upper and middle ranks; and here I am happy to quote from the report of the Vaccination Section of the Provincial Medical and Surgical Association for 1839, a passage which I deem highly creditable to my professional brethern in Ireland; quoting some particulars from Doctor Cowan's account of small pox in Glasgow. The report says, "On an average, thirty per cent. of the admissions into the Glasgow hospital consisted of Irish; but of 96 cases of small pox, only four took place among

* I may here mention a circumstance which is most creditable to the humanity and judgment of the late Dr. Troy, Roman Catholic Archbishop of Dublin. Apprehending that strong prejudices, particularly among the lower orders, would retard the progress of vaccination in Dublin, I waited upon His Grace, by desire of the Directors of the Cow Pock Institution, to solicit his countenance and support on the opening of the Cow Pock Institution; and after a lengthened conversation upon the history of cow pock, and the proofs of its merits, during which he seemed greatly interested, he was pleased to express himself much gratified at the interview, giving every assurance of his desire to promote so desirable an object; and at his suggestion I drew up a short account of vaccination, printed copies of which he had distributed at the chapels in Dublin and its neighbourhood, which had the best effects.

that people. When we consider their poverty and habits of life, existing in the middle of a pestilential atmosphere, as they must have done, this immunity is the more remarkable, and is ascribed by Dr. Cowan to the efficient system of vaccination carried on by the surgeons of the county hospitals and dispensaries."

The extension of the practice was much aided by the adoption of it in the army serving in Ireland, which was recommended and enforced, at an early period, by Dr. Renny.

The Cow Pock Institution has for 36 years afforded gratuitous vaccination to the poor of Dublin and its neighbourhood; and it affords me great pleasure often to see mothers bringing their children with confidence to the institution for vaccination—they themselves when young, and other members of their families since, having been successfully vaccinated there.

In the year 1799 cow pock inoculation was first introduced into Germany, where it was patronized by the Emperor, who gave silver medals to six parents in Alsace, who consented to have their children vaccinated. Dr. Stromyer commenced the practice at Hanover, in the spring of 1800. Among his patients were many children of the nobility; and numerous applications were soon made to him for vaccine matter. Dr. Ballhorn was also extremely active. From Hanover it found its way to Vienna, where the inquiry was prosecuted with great industry by Dr. De Carro of that city.* At Leipsic, Dresden, Berlin, Dusseldorf, and other cities in Germany, the new practice soon became, through the exertions of

* Previous to the introduction of vaccination at Vienna, with a population of 254,000, the annual average of deaths by small pox was about 800. In 1801, the first year of the new practice in that city, there died of small pox only 164; in 1802, 62 died; in 1803, 27; and in 1804, the deaths by small pox were reduced to two, and even those did not belong to the city.

these gentlemen, very generally adopted. Dr. De Carro gives us an account of the establishment of it in Bohemia, and of its successful introduction into Carintha, by Dr. De Vest.

In Swedish Pomerania, vaccination was introduced in 1801, and soon became very general, with the effect of diminishing the mortality of small pox from 700 yearly to 50. No instance occurred of small pox after vaccination.

Early in the year 1800, vaccination was first employed in France with virus sent from London. Of 30 inoculated, nine took the disease, and had it in the most regular manner. A committee was appointed, and subscriptions entered into, to defray the expense of experiments, instituted to ascertain whether cow pock possessed the advantages attributed to it by Jenner and the English physicians. With the same view an hospital was opened the year following; and, after a most impartial investigation of its merits, it was found to be fully entitled to the encomiums bestowed upon it. In this decision the schools of medicine, the learned societies, and the most enlightened practitioners throughout France, entirely coincided. Its progress throughout that country was, in consequence, rapid beyond expectation, which was in no small degree accelerated by the exertions of the magistrates and clergy.

The influence of the French Government was exerted in every possible way to extend the practice. Vaccine stations were established throughout the country, with salaried vaccinators; laws were made to enforce, and annual prizes granted to promote, so desirable an object. A speedy diminution of small pox was the consequence; so that in 1815 the small pox hospital in Paris was without a patient.*

* In Napoleon Buonaparte it found a zealous promoter, who decreed that any persons who refused vaccination, or did not return or bring children to be inspected on the days desired, should be excluded from

Spain availed herself also of this important discovery, where it has long been practised under the immediate sanction of government. And in Portugal it found a zealous advocate in Dr. Dohmeyer, of Lisbon; and from thence vaccination was extended to Spanish American and Asiatic domains, chiefly by the exertions of Dr. Francisco Xavier Balmis, King's Physician, under whose directions an expedition was sent out, several years ago, to establish vaccination in the Spanish settlements in America and Asia, where small pox had previously been so destructive, that it has been calculated many thousand lives have been saved yearly by the general practice of vaccination.

In Portugal, where variolous inoculation has been prohibited by law, a death from small pox is almost unknown of late.

In Switzerland, Italy, and Hungary, the practice has become general; and even the Turks, who were averse to small pox inoculation, have, by the adoption of cow pock, surmounted their most inveterate prejudices.

In 1814 vaccine lymph was transmitted from the London Vaccine Establishment by Sir Gore Ouseley, the British Ambassador, to Tehran, the Persian capital, with which the children of the Prince Royal, and upwards of 1400 persons were successfully vaccinated.

Dr. Odier inoculated 600 persons at Geneva, where small pox raged epidemically, with such violence, that 250 fell victims to it in a short time. All his patients escaped though they kept up a constant intercourse with those ill of the small pox. The Doctor testifies, that after six years' active vaccination, small pox had ceased in that city and the surrounding country, and that when casually introduced it did not spread, the inhabitants being *unsusceptible*.

the assistance afforded to people in times of distress, from scarcity, inundations, storms, &c.

From Geneva infection was sent to Lausanne and Berne, and the practice was soon extended through all the Cantons.

The progress of vaccine inoculation has been much promoted in the Italian republic, by the exertions of government, who ordered that a proclamation recommending it should be read by the clergy from the pulpit. At Milan it has been practised in every parish, and even in the churches. Dr. Sacco, of that city, who was appointed Superintendent-general of Vaccination for that part of the Cesalpine republic, in a letter to Dr. Jenner, dated Jan. 1808, stated that during eight years he vaccinated with his own hands more than 600,000, and by his deputies more than 700,000, in different parts of that country. He added, that since the introduction of vaccination, the small pox had disappeared, and in the city of Milan, where small pox, year after year, committed dreadful ravages, they had not for some years past seen that disease. To have vaccinated 1,300,000 in a population of six millions, required extraordinary exertions indeed.

A successful inoculation at Moscow, in 1801, happily introduced it into Russia, where every seventh child died of small pox before the introduction of vaccination. The child who was the subject of inoculation being, by order of the Empress Dowager, christened Vaccinoff, and a pension settled upon her for life. She was immediately carried to St. Petersburgh, and placed in the foundling hospital, as a source of future infection, which has been propagated throughout the whole extent of those vast dominions. The Empress sent Dr. Jenner a diamond ring, accompanied with a most flattering letter. Orders were issued for the general adoption of vaccination, under the direction of Dr. Crichton, Knight of the Order of St. Walmoden, Court Physician. Surgeons were appointed for every province, from whose reports it appears, that from 1804 to 1812, 1,235,597 were vaccinated. The

advantages of vaccination being proved by the diminution of small pox, fresh orders were issued, that every subject in the empire should be vaccinated, to which but little resistance was offered. An expedition set on foot by the Court of Petersburgh, was very successful in propagating vaccination through the territories of Siberia, Tartary, and the northern parts of China.

Sweden and Denmark have fully participated in the benefits of vaccination.

In 1799 the Swedish government directed the attention of the College of Health to investigate the merits of the Jennerian practice; and a favourable report being made, stations for vaccination were soon established throughout the kingdom, and a law enacted to enforce the practice which led to the suppression of small pox in Sweden. In 1779, small pox destroyed 1500 persons; in 1704, 12,000; in 1800, 12,800; in 1801, 6,000; in 1822, 11; in 1823–37, 11.

In no country is vaccination more generally practised than in Norway, where a law was passed in 1810 prohibiting small pox inoculation, and enforcing vaccination; which, however, no person is allowed to practise who has not been properly instructed in the subject. None who previously had not the small pox can attend public schools, be apprenticed, confirmed, married, or enlisted, without producing satisfactory evidence of having been vaccinated, and every facility is afforded out of the public funds for gratuitous vaccination.

At an early period vaccination was introduced, and made rapid progress in the Danish dominions. Committees were appointed to extend it to every part of the monarchy—to the islands of Ferrar, Zealand, Funin, Iceland, and Greenland.

It was well received by the King of Prussia, who ordered that all those of the Prussian army who had not had the small pox, should be inoculated with cow pock;

he also submitted his own children to vaccination; the practice has now become very general in that country. Prussia has been more successful, perhaps, than any other European nation, in the diffusion of cow pock. In France 12,857 persons died of small pox in 1818 and 1819, which, in a population of 54 millions, gives one in 4,518. In Prussia the deaths from small pox in 1820 and 1821, were 3137, which, in a population of 23 millions, gives one in 7204. In Berlin alone, the annual average number of deaths from small pox for 20 years, immediately preceding the general introduction of vaccination in 1802, were 472; for 20 years following it was reduced to 175. Since the founding of the Vaccine Institution in 1812, the annual mortality of small pox has decreased to 50; since 1817, only 12; and in 1821 and 1822 only one in each year. Hufeland says the small pox was epidemic in Prussia in 1823. The cases in Berlin that year were 200, of whom five died. In the last epidemic, before the introduction of vaccination in 1801, 16,000 were affected, and 1646 died.

At Berlin and Breslau, large institutions for vaccination have been long established, and all through the country a perfect system has been enforced to promote its diffusion. Gratuitous vaccination is practised by district, salaried vaccinators, *who must be licensed practitioners.* Small pox inoculation is every where strictly prohibited.

Vaccination has been long practised in Holland. In 1807, Dr. Tellegen vaccinated 25 children at Elde and Paterswalde, in the department of Drenthe, and the small pox appearing in a malignant form at both these places, several children suffered severely, three died, and one lost its sight, while the above mentioned 25 children *remained free from all contagion,* during the whole time that this disease raged with such violence. This circumstance attracted the notice of the inhabitants, who adopted vaccination, and in the course of a few days 150 were vaccinated with success by him; and the consequence was,

that the spread of small pox was prevented, and *not one child has since died, or otherwise suffered by that disease.*

Dr. Telligen, of Groningen, also gives a favourable account of the practice in the united provinces. The small pox, he says, has been banished from Groningen. He offered ten ducats for every child who would take small pox after vaccination, but the premium was never claimed by any one.

In August, 1800, Drs. Marshall and Walker, introduced it into Gibraltar, where they met with a most favourable reception from Governor General O'Hara, who had his own infant immediately vaccinated; the soldiers of the garrison and their children, who had not had the small pox, were also inoculated, all of whom had the disease in its usual mild form. From thence the practice was disseminated through most of the islands in the Mediterranean, particularly Minorca, Malta, and Sicily, and the Ionian Islands, in all of which the people were so favourable to it, that it soon became general.

In 1820, during Dr. Walsh's visit to Malta, small pox raged with great malignity. It was brought from the Morea, by a Greek boy, who was sent to the lazaretto, where he died. His infected clothes being incautiously sent to be washed to a neighbouring village, the disease suddenly burst forth, and spread rapidly over the island. Dr. Walsh informs us, on the authority of the resident physician, that 7296 persons were attacked by it; 2407 were reported to have been vaccinated, but there was no evidence of their being regularly vaccinated; 301 had the genuine cow pock, and 91 had the small pox before; 1051 of those attacked died, of whom 110 had been vaccinated, 25 had had the genuine cow pock, and nine the small pox before. At Palermo, an hospital exclusively dedicated to vaccination, was opened in 1800, in which city the small pox proved fatal in that year to 8000 persons, but did not make its appearance the year following, after Dr. Marshall had vaccinated 10,000.

It was to be expected that vaccination would soon extend beyond the limits of Europe; it crossed the Atlantic, and made its way into America and the West India Islands. In November, 1801, three hospitals were opened in America, viz. at Rochester, at Franklin, and at Westford. In these, experiments were made to ascertain the antivariolous power of cow pock, the result of which was most satisfactory. We are informed by Dr. Waterhouse of Cambridge, that he, under the patronage of President Jefferson, a great advocate for cow pock, has long since established it in Virginia, Kentucky, Columbia, and the cities of Washington and Philadelphia.

Dr. Rush, writing to Dr. Lettsome, in 1802, states that Dr. L's publication on vaccination had very much contributed to spread the knowledge of it through the United States, and that the only obstacle to its universal adoption was the scarcity of virus, which difficulty, however, was daily lessening.

With vaccine matter sent by Mr. Ring to Dr. Longman, of Quebec, the benefit of vaccination was extended to that and to the adjoining province—to Lower Canada, Isle Percee, and along the shores of the New Brunswick side of the Bay of Chaleurs, in the Gulph of St. Lawrence. Dr. James Smyth, of Baltimore, Maryland, informed Dr. Jenner, in a letter, dated 14th May, 1807, that he, being the first to communicate vaccination to that part of the United States, commenced the practice in May, 1801, and having continued it for many months, frequently exposing his vaccinated patients to variolous infection without effect, he succeeded in gaining for cow pock the entire confidence of the people in that city, and it was soon adopted through every part of the United States, and to an unknown distance among the Indian nations; and he adds, that the small pox which formerly was so general and fatal every spring in Baltimore, is now banished from that city. The Canadian Indians, who so long suffered from the ravages of small pox, which

carried off more than all their intestine wars, had the benefit of vaccination conferred upon them, by the late Dr. Edward Walsh, Physician to the Forces. On the shore of the great river Ouse, which falls into the north side of the Lake Erie,—one of the stations where the tribes who wander over the vast continent, assemble periodically,—he proceeded with his work, and found a vast assemblage of men, women, and children, of various tribes, collected from remote quarters, and all submitted to vaccination with the greatest confidence; and, finding every thing to turn out as they were taught to expect, and that no pain nor illness followed, the Doctor gained their confidence and esteem; and they continued to bring their children to him, from the remotest parts, as long as he remained in Canada.

In the capital of Mexico, more than 9,000 died of small pox, in one year. Vaccine inoculation was commenced in Mexico, by Dr. Thomas Murphy, who obtained the lymph from North America. The practice was eagerly submitted to, by the Indians. In the principal cities, of the kingdom, committees were formed to promote the practice. In Peru and Chili, where small pox raged with desolating fury, cow pock was introduced, in January, 1804, with the most happy effect. In a few years, small pox was reported to have been nearly extinguished in these countries. In the same year, the practice began in St. Salvador, and has since spread through all the provinces of Brazil. The Prince Regent exerted himself in its favour; and so beneficial has been its effects, that the small pox, formerly very destructive there, totally disappeared. By returns, lately transmitted, to the London Royal Jennerian Institution, from Pernambuso, it appears that, from 1832 to 1838, inclusive, 13,695 were vaccinated there, of whom 3,351 were adults. In Buenos Ayres, and the neighbouring country, where six houses, for vaccination, were opened, the practice has been long established, with the

effect of lessening small pox. In 1838, only 2,190 were vaccinated,—owing, we are informed, by the correspondent of the Jennerian Institution, to the surrounding population, not being visited by "that wholesome fear," the small pox not appearing there that year, which, as experience has always proved, not only there, but in most other places, as the greatest inducement to the people, to seek for safety in immediate vaccination.

In the island of Jamaica, small pox inoculation has been prohibited, and vaccination established.

With lymph, sent by Dr. De Carro, to Constantinople, in 1800, the son of the British ambassador, Lord Elgin, was successfully vaccinated, when only seven days old; when a few Turkish parents followed the example, and had their children vaccinated. But the practice did not gain much ground there, till Dr. Walsh, the learned author of "A Residence at Constantinople," who had paid much attention to the practice of vaccination, before he left home, inoculated, with cow-pock lymph, which he had obtained from the Institution in Sackville Street, the child of Lady Strangford; and being anxious to disseminate, abroad, a practice which his previous experience had sanctioned, he took infection from this child's arm, and vaccinated others; and thus extended the practice to many hundreds. "I did so in this place," says the Doctor, "and subsequently in others; and I have the pleasure to think that if the lady of one British Ambassador introduced inoculation to the people of the West, through the medium of her child, the wife of another, a century after, returned the benefit, by introducing a still further improvement, through her child, to the people of the East, in places where it was not known or practised before." The Dr. introduced vaccination into Prince's Islands, in the sea of Marmora, where it was previously unknown, and where small pox committed dreadful ravages. The people sent their children to him, from all the islands. He conti-

nued the practice for two months, vaccinating about 20 a week, young and old. Chalki was his head quarters, and when all those who had not had the disease were thus protected there, he proceeded to Antigone, where, under the auspices of the good Archbishop of Mount Sinai, he protected people there also.

"The Turks," Dr. Walsh informs us, "were long very hostile to Vaccination, on the principle, that it was impious to take any precaution against whatever disorder it pleased Allah to send:" and among the number of Greeks whom the Doctor vaccinated, he never could persuade a Turk to submit his child to the operation. But in April, 1825, Abdul Famed, the eldest son of the Sultan, died of the small pox. The Janissaries had an intention of deposing his father, and set him on the throne, at a competent age; and when their object was disappointed, by his premature death, they spread a report that he was poisoned by his own father, to anticipate their intentions. The anxious parent, however, immediately sent for a Frank physician, and had the rest of his children vaccinated by him; and so, by his example, introduced it among the people. To aid his views, he endeavoured to persuade them that the process is not a prophylactic, but a therapeutic—not intended as a preventive to a coming disease, but as a cure to one which always exists in the human constitution; and the Turks, satisfied with the argument, are beginning to submit to the operation."

On his return to the East, some years after, the Doctor made enquiries as to the effects of his vaccinations, and learned that the small pox had, in the mean time, broken out in an aggravated form. Not one of his patients had died of it, though a few were attacked in a mild form.

After many abortive attempts to excite the disease in India, with vaccine lymph, sent by sea, from Europe, the Honourable Jonathan Duncan, Governor of Bombay,

addressed a letter, in March, 1801, to Lord Elgin, begging that his Lordship would direct a supply to be sent from Constantinople, viâ Bagdad and Bassora. In September following, his Lordship, who had already evinced so much confidence in vaccination, had a supply forwarded to Bombay; but it failed, as did other packets, afterwards sent, in the same way. By persevering, however, in trials, with supplies frequently received, the disease was produced early in 1802, by Dr. Short, at Bagdad, with infection, sent by Dr. De Carro; and, with infection renewed on patients at Bagdad, Mr. Milne succeeded in vaccinations, at Bassora; and, from this source, a successful vaccination was performed, by Dr. Scott, at Bombay, on the 14th of July, 1802, on a healthy boy, three years old, from whom lymph was obtained for future vaccinations, and supplies were immediately sent to Surat, Goa, Ceylon, Madras, and other places.

In the Bombay Courier, for July, 1802, was published, an Account of the Introduction of Vaccination into India, to the great joy of the inhabitants. The government of the presidency afforded every assistance towards its dissemination, which was much promoted, by a testimonial, signed by a vast number of the most eminent medical men in London, and sent out by Mr. Ring in 1803. This was re-published, and circulated in India, where it put a stop to much controversy upon the subject. After the failure of many efforts to convey infection, from various places, to Bengal, Dr. Anderson, Physician-General at Madras, succeeded in conveying it thither, in a recent state, by successive vaccinations, on board ship; and on the 17th of Nov. 1802, a healthy boy was landed, with genuine vaccine vesicles of the 6th day, on both arms, from which several children were immediately vaccinated. The vaccine infection being thus established in Bengal; Lord Wellesley, seeing the benefits likely to accrue from the practice, used his influence to promote it. He appointed a skilful surgeon, Mr.

William Russell, as medical superintendent of vaccination, at Calcutta; and had stations established throughout the provinces, under the British authority. Mr. Russell was to take charge of the preservation of the infection—supply the metropolis, and different vaccine stations, with genuine lymph—instruct such of the Hindoo and Mahomedan surgeons as were disposed to practise vaccination —and vaccinate all those who should apply to him for that purpose. To facilitate and promote the practice, a concise history of cow-pock, and its safety and efficacy, with a strong exhortation to the natives, to avail themselves of its benefits, was published, in the Persian, Bengalese, Findevy, and Sanscrit languages, and widely circulated. By those decisive steps, the practice was extensively disseminated, and soon generally adopted, in all the British settlements of India;—the Asiatic princes, vying with each other, we are informed, in procuring the cow-pock matter, in order to propagate it in their respective states; and accounts were received of its introduction into Turkey and Persia.

We learn, from a late number of the Calcutta Courier, that Ispahan has been subjected to a severe visitation of small pox, which was making dreadful ravages there,—hundreds of children falling victims to it, notwithstanding the existence of a small vaccine establishment, then maintained by the Presidency of Busheir. The Persians have not the least prejudice against vaccination; but, on the contrary, are willing to encourage it throughout the country. The name of Jenner is held in great veneration among them, and encomiastic verses are known to have been composed to the memory of that great man. An experienced Armenian has been employed in the vaccine establishment, whose operations are attended with the greatest success. Another Armenian, of great intelligence, who was in the Indian army, during the administration of the late Marquis of Hastings, is stationed at Ispa-

han, as physician to the Governor of that place; there is, therefore, every reason to hope, that small pox will soon be banished from that quarter.—Thus, by the assistance of Dr. De Carro, and the indefatigable exertions of the medical practitioners at Bombay, the inestimable blessing of vaccination was extended to most parts of Asia. The British medical officers were most zealous in promoting the practice, and were every where cordially assisted and encouraged by the supreme authorities.

Vaccination has been much practised in Goa, and throughout the Portuguese settlements in India.

Since the introduction of vaccination into India, we have had many accounts of its safety and beneficial consequences. Dr. Keir, Superintendent General of Vaccine Inoculation at Bombay, in a letter to Dr. Jenner, gives a most satisfactory account of the progress of vaccination at that Presidency. He calculates that since the introduction of the practice, in 1802, to June, 1807, there were vaccinated, at the several stations, 300,000, or nearly so,—many thousands of whom were afterwards put to the test of variolous inoculation, and exposed to small pox contagion in every way, but without effect. The small pox, which was annually epidemic at Bombay, and proved fatal to one half of those attacked previous to the introduction of cow pock, was entirely exterminated, and had not appeared there for three years, before the date of the Doctor's communication.

Mr. Gibson, in his account of the Province of Guzzerrat, in the transactions of the Bombay Medical Society, states, that the small pox is frequent and fatal, in the remote and less frequented districts; but through the country between Amadabad and Surat, where vaccination has been generally practised, small pox is less frequent, and a consequent increase of population is observed.

It is stated, in the Bombay Courier, that, during the

months of January, February, March, April, and May, 1825, which embrace nearly the whole period of a small pox epidemic, out of 4,150 European soldiers, taking the average number for the five months at the different stations of the army, at all of which small pox prevailed, only nine were affected, three of whom died. During the same period only seven out of 30,000 Sepoys, or at least enlisted men, were attacked with small pox, nine of whom died; so that, though 33,000 men were exposed for five months, in situations where this disease was at one time or other epidemic, only one in 400 was affected, and only one in 2,600 died. As Europeans are all generally vaccinated, and as, we believe, native recruits also undergo that operation on joining their regiments, it is but reasonable to conclude, that this comparative immunity of the army from small pox, during its prevalence in an epidemic form, was owing to the preventive powers of vaccine inoculation.

The returns from Madras to Dec. 1806, stated that 851,870 were vaccinated in that settlement. Subsequent accounts have been equally favorable—all ranks of people adopting the practice—and sanguine hopes held out, of preserving that portion of the globe from future visitations of small pox, which had previously committed such dreadful ravages there.

The returns from Bengal vaccine stations to the same date, amount to 42,000 vaccinations; and by a statement made to parliament upon the debate on Dr. Jenner's claims, in July, 1807, it appears that previous to that period, the number of vaccinations performed in the East Indies amounted to more than two millions, and it has ever since been observed, that the diminution of, or total freedom from, small pox, is every where proportionate to the extension of vaccination; but I regret to hear that from the neglect of it in some places, the small pox still continues to exert its baneful influence. The suppression,

by Lord William Bentick, Governor, through motives of economy, of the vaccine stations, did great mischief, but I am happy to learn that the evil will be rectified. The present Governor-general is well inclined to forward vaccination by every means in his power, more particularly by granting establishments and vaccination depots on a more liberal scale, and in the hills situated in upper India, had appointed committees to advise on the most desirable way of proceeding. The result will, I trust, be favourable.

An intelligent correspondent, Dr. Wood, who was long resident in India, informs me that small pox more frequently proves fatal when occurring in those subjects born and vaccinated in India, than in those born and vaccinated in a European climate, and that in the latter the small pox is much more modified in cases bearing distinct marks of vaccination.

Inoculation with small pox being often so unsuccessful in the hot climate of India, that it was well remarked by a medical officer, long resident at Calcutta, that vaccination was the greatest blessing ever conferred by Great Britain on India, where the inhabitants received the boon with gladness, and vaccination spread with a rapidity unexampled in cold climates. In some parts of India, however, small pox, from neglect of vaccination, commits frightful ravages; thus in Ajmeer, during six weeks of the year 1838, 3000 perished by that disease;* and, if I am correctly informed, this occurred during the temporary suspension of the vaccine stations.

Through the exertions of Sir George Staunton, and of Mr. Pearson, surgeon of the British Factory at China, a favourable reception was given to vaccination in Canton, where large contributions were raised to establish institutions for extending the benefits of cow pock through every part of that immense and populous country.

* Vid. Asiatic Journal for December, 1838.

"I am quite surprised," says Surgeon Livingston, in a letter to Mr. Hume, M.P., dated Macao, March, 1820, "to observe in many letters, and in the periodical publications, that the vaccine question is still keenly agitated. *We have no doubt here.* I sometimes vaccinate 500 a week, and for the last ten years may set up a claim to an experience on the subject, which, when compared with that of your noisy and angry disputants, would place them as nothing; yet no failure has occurred in my practice. Mr. Pearson has been still more extensively engaged than myself, and has been equally successful. Yet, you know, the small pox rages in China every spring, sometimes with extreme virulence. I have often seen it in its worst forms, in the midst of my vaccinated patients, in the *same house*, and in the *same bed*, yet no failure has occurred, not even a variolated appearance."

Dr. Christie, many years resident in Ceylon, states that small pox carried off annually a sixth part of the population previous to 1800, when an attempt was made to mitigate the ravages by opening hospitals for small pox patients, and for those who wished to be inoculated. During the two following years, immediately preceding the introduction of vaccination, 2,110 patients with small pox were treated in the different hospitals and villages, of whom 473 died, or one fourth of the whole; 4,158 were inoculated with small pox, and 108 died, nearly one in 38; and this great mortality occurred under the most favourable circumstances of treatment. In August, 1802, the Doctor, after several unsuccessful trials with dried vaccine lymph sent by Dr. Jenner, vaccinated six children with infection sent on threads from Bombay. It succeeded in one of the six, and from that child the vaccine was communicated to others, and disseminated through the island. Governor North, by the advice of Dr. Christie, suspended the small pox hospitals, prohibited variolous inoculation, gave every facility to vaccination, and in two years, vac-

cination during that time being extensively practised, the small pox was extirpated in three of the principal districts of the island; but in consequence of prejudices raised through the province of Jaffna, where a spurious pock had been propagated by ignorant inoculators, and had been followed by small pox, the progress of vaccination was interrupted there; but further exertions being made afterwards to promote vaccination, and discourage variolous inoculation, small pox was at length totally extinguished in all that part of the island which belonged to Great Britain at the time. It is stated in a letter from Dr. Christie, dated Colombo, Jan. 24, 1810, that during the year 1809, 25,697 were vaccinated, which, added to 103,035, the number vaccinated in former years, make a total of 128,732. From February 1808 to October 1809, no case of small pox appeared in the island; the disease was then brought to Jaffnapatam from Quilon, on the Malabar coast. The infection spread to a few individuals who had not been vaccinated, but its progress was immediately arrested, by the removal of the infected, and the indiscriminate vaccination of all the prisoners in the Pattah of Jaffnapatam, where the disease first appeared. The Doctor adds, "the vaccine disease has now been so extensively diffused through this island, that while the inoculations continue so numerous as at present, we can have no reason to apprehend that the contagion of small pox will ever spread epidemically in any part of the British possessions in Ceylon. 1,830 persons have been vaccinated during the last two months." The Doctor's favourable anticipations would, no doubt, have been realised, had a proper system of vaccination been persevered in; but, unfortunately, the total extinction of small pox, for some years after the introduction of vaccination, from the whole of the British possessions in Ceylon, where from 1810 to 1819 the disease was totally unknown, lulled the unfortunate Ceylonese into a state of fatal security;

they gradually neglected and laid aside vaccination, and as might be expected, the enemy soon appeared among them. Dr. Kinnis of Ceylon reports,that during six months, ending 15th January, 1820, 5,451 were attacked with small pox, and 1745, or 1 in 3 died. During five months, ending on the same day, on the Kandian provinces, 2,423 were admitted into hospitals, and 1,200 died or 1 in 2. The total number of cases being 7,874, and of deaths, 2,945. "This awful visitation," says the Doctor, "inflicting alike the guiltless child and its unprovident parent, was brought on the people of Ceylon by the neglect of vaccination. The Ceylonese being thus roused from their apathy, vaccination was again resumed, and with corresponding good effect.

By similar means small pox was driven from the Isles of France and Bourbon, and from the Cape of Good Hope. The settlers of the Cape of Good Hope, and Sierra Leone, received the full benefit of vaccination; but the native Africans being still in a state of barbarism and ignorance, are not likely soon to avail themselves of it.

Through the Medical Superintendent General in Ceylon, we are informed that vaccination has been successfully and extensively used in Sumatra, where the ravages of small pox were occasionally very great.

The South Australian Colonies have had the benefit of vaccination bestowed upon them by the Royal Jennerian and London Vaccine Institution. Eight ships, containing upwards of 1,500 emigrants, were supplied with vaccine by that excellent Institution, and of the benefits resulting therefrom, we have ample proof in the following communication:—"John Sullivan, Esq. Surgeon to the Amelia Thompson, one of the Australian emigration ships, that left London for New South Wales in March 1838, reports that, 'After leaving the harbour, the confluent small pox broke out. The first case proved fatal; four other cases appeared immediately afterwards; of these two

were fatal, one being a woman, aged 58.' Mr. Sullivan having been supplied with vaccine from the Institution, commenced vaccinating all on board, passengers and crew; on those on whom it produced no effect, he repeated the vaccination every 8th day; no case of small pox existed after the 12th day from commencing vaccination, and in 24 days from the first vaccination small pox was banished, although 60 children, and altogether 276 persons were on board." Dr. Epps very properly suggested, that this instance would serve to establish, first, the blessing of vaccination, and secondly, the efficacy of it. "What," he asks, "without the vaccine, would in this case have been the consequence? The ship would have been a *pest house* on the deep; death would have claimed many victims, and disease deform still more." Mr. Sullivan left vaccine lymph at New South Wales, with the Governor for the use of the residents. Thus not only were the passengers protected, but the residents and natives also.

I shall now consider the subject in a practical point of view, as divided into,

1. *Local appearance and progress of inoculated cow pock, under its most perfect form.*

2. *Remarks on its several stages, and the minute differences which are commonly observed therein.*

3. *Varieties frequently observed, but which are not incompatible with the genuine disease.*

4. *Deviations of greater magnitude, or suspicious cases.*

5. *Distinctive marks of spurious cow pock, with suggestions of some of its probable causes.*

6. *Constitutional symptoms.*

7. *Inoculation.—The mode of conducting it, and circumstances to be attended to in the state of the patient, and the medical treatment of the complaint. The best modes of preserving the virus.*

8. *Revaccination.*—And I shall subjoin some remarks on cow pock, compared with small pox and other eruptive diseases, and conclude with an Appendix, containing the result of my inquiries into the state of vaccination and prevalence of small-pox through Ireland.

1. *Local appearance and progress of inoculated cow pock, under its most perfect form.*

About the third or fourth day, that, on which the operation was performed, inclusive, a small red pimple, appears, and on passing the finger over the inoculated part a degree of hardness may be felt. On the fifth day a vesicle is formed, of a light pink tint, often with a shade of blue, which gradually changes to a pearl colour; the vesicle continues to enlarge, developing its characteristic appearance, until the eighth day, *viz.* spreading, yet preserving a shape perfectly circular, if the operation was performed by puncture, or oval if by scratches; it goes on increasing in size until the eleventh or twelfth, when it usually arrives at its acme, its diameter being about two or three tenths of an inch. At this period the appearance of the vesicle is very characteristic, semitransparent, depressed in the centre, with a turgid, shining, wheel-shaped, and somewhat striated margin. The structure is cellular, but, unlike the common cellular membrane, its cells do not communicate, hence we are obliged to puncture it in several places, in order to obtain a supply of lymph. One-half of a vesicle has been torn off by violence, while the remainder, owing to its cellular structure, retained its contents, which could not be the case if the cells communicated. About the ninth or tenth day an erysipelatous efflorescence appears, denominated the *areola*, which gradually extends from the vesicle as a centre, to the size of a crown piece, of a deep rose colour, and of an increased intensity the nearer the vesicle, gradually shaded off into the surrounding skin, upon the surface of

which it seems to lie, as has been well remarked by Dr. Cappe of York. This inflammation advances with the progress of the vesicle, (often attended with a considerable pulsation in the part, and a remarkable ebbing and flowing, as if it were, in the intensity of its tint,) and arrives at its height at the same time.—It is accompanied with a considerable degree of tension and hardness, which is greatest contiguous to the vesicle. Some degree of hardness may often be felt in the skin before any areola is observed. When fully formed the vesicle appears very turgid still, however, preserving the central depression, and its colour becomes darker, sometimes approaching to a blue or purple tinge. The areola acquires a deeper hue, its margin being regular and well defined.

After remaining nearly stationary for a day or two, the areola fades away, generally commencing from the centre, so as to leave a florid ring corresponding with its margin, but which also soon disappears. The hardness declines with the areola; an amber coloured crust which had begun to form in the centre of the vesicle about the 10th day, extends gradually to the circumference, becoming darker as it increases, until in a few days the vesicle is converted into a hard, glossy, and semitransparent scab, of a deep mahogany colour, which exhibits a concave surface like the vesicle itself, but more contracted. The conversion of the vesicle into crust is a tardy process. The desiccation commences in the centre, and proceeds so slowly to the circumference, that it is seldom completed before the 18th or 20th day, previous to which time some fluid will be found often at the margin of the vesicle. When the crust falls off, an indelible circular or oval pit remains of a lighter colour than the surrounding skin, and marked with minute indentations like pin-holes corresponding with the cells of the vesicle, very characteristic of the true vaccine cicatrix; though the character, dimensions, and foveolous appearance may be altered by rude treat-

ment of the vesicle without lessening the protective influence, still I should look with some suspicion on the case when they are absent. I felt however more confident upon this point twenty years ago than I do at present. I now know that the presence of the characteristic cicatrix is not a certain proof of constitutional security, nor its absence of the contrary.

Dr. George Kennedy had two children in the fever hospital with confluent small pox, one 7 years old, and the other 1, who were vaccinated during infancy, and had well marked cicatrices—both died.

2. *Remarks on its several stages, and the minute differences observable therein.*

In the first period, nothing peculiarly appropriate to cow pock can be observed in general, except that upon puncturing the part, a colourless fluid will be discharged. If we view the inoculated part at an early period, through a glass, we shall sometimes observe it to be composed of minute vesicles, at first distinct, but which soon run together and produce one well defined vesicle. When fully formed, the vesicle exhibits a reticulated appearance, with a dark spot in the centre, and the contained fluid will be found perfectly pellucid : at a more advanced stage it acquires some degree of viscidity ; still, however, it will be limpid. The size of the vesicle varies from one tenth to six tenths of an inch, and the quantity of lymph is very different, even in vesicles of the same age and size. What influence this circumstance may have upon the *quality* of the virus, I cannot pretend possitively to say, but from my experience hitherto, I am much inclined to believe, that *cæteris paribus*, the smaller the quantity, the more active it will be found, and *vice versa*. Mr. Bryce of Edinburgh makes the same remark. From a vesicle which discharged an uncommon quantity, the greater number of inocula-

tions failed. At Reigate Poor House, however, of eighty-eight patients infected from one vesicle, seventy-nine took the disease; this must be considered a very rare instance, and it seems to me probable, that from the irritation produced by puncturing the vesicle, the discharge of a fluid little else than mere serum may be promoted, after the genuine virus has been evacuated. Hence for the same reason, it would appear, that the matter which issues first should be the most active. The probability of this being the case was first suggested to me by Dr. Clarke of this city; however, I should deprecate the practice of taking so much lymph from one vesicle, for reasons herein after to be stated.

The hardness which surrounds the base of the vesicle is not remarkably perceptible, during a regular course, until after the seventh day, or perhaps later, nor should there be any considerable redness; the skin immediately contiguous having at that period rather a milky white appearance. The blue shade which the surface of the vesicle presents, has been alledged by some to be a discriminating mark of the *casual* disease, and therefore to be particularly wished for in the inoculated. Dr. Woodville is of this opinion; yet a case which occurred to himself shewed that the irritable and vascular state of the parts, and exposure to the air, were the sole causes of the difference; having inoculated a man, in the arm and also in the hand, the vesicle on the latter was more livid, and accompanied with a higher degree of inflammation. Mr. Ring has corroborated this opinion; I had more than one instance myself of the fact, and besides, the blueness is sometimes wanting in the casual cow pock. When the disease has reached its acme, it has been compared by Mr. Bryce, and not unaptly, to a round body like a worm, coiled up under the skin. The patient now complains of stiffness, slight pain, and heat in the part; and there is sometimes such an itching that children can with difficulty be

restrained from scratching off the vesicle. We shall hereafter find, however, that this symptom is much more frequently observed in the spurious disease.

The areola is formed earlier in infants than in older children; it at times terminates abruptly, instead of the shade becoming gradually fainter as it recedes from the vesicle. Looking stedfastly on it for any length of time, one may sometimes see transient blotches of white through it. On its decline occasionally two or more concentric circles are remarked, which some consider as a very favourable appearance, and as the redness passes away, a shade of yellow often succeeds.

The crust seldom falls off sooner than the time before stated, but often remains longer; it falls off at once, adhering very firmly until then, and has been aptly compared in form and appearance to the section of a tamarind stone. After it is perfectly formed and the areola quite gone, a second areola has been known to appear, less extensive and with less hardness in the skin, which I suppose to arise from the irritation produced by the crust: it disappears in a day or two. The appearances above described will enable an attentive observer to distinguish the genuine vaccine from every other form of disease. The commencing vesication about the fifth day, gradually increasing and assuming a well defined circular form, with turgid and somewhat striated edges, depressed centre, cellular structure, pearl or light bluish colour, contents of crystalline transparency, surrounding tumefaction and redness on the 10th or 11th day, slight fever, and finally the gradual conversion of the vesicle into a dark brown crust of stony hardness, adhering firmly fourteen days or more, and leaving a circular or oval cicatrix marked with very minute pits or indentations, are circumstances which cannot be mistaken.

The varieties which I have observed in the vaccine affection chiefly consist in its slow or more rapid develop-

ment, size, colour, and intensity of the vesicle and its accompanying areola. Scanty or more copious supply of lymph afforded by the vesicle and degree of its activity, and in the nature and extent of the vaccine action on the constitution.

3. *Varieties frequently observed, but which are not incompatible with the genuine disease.*

The hardness on the inoculated part is often perceptible before any inflammation appears, which generally affords a favourable prognostic. The small pimple at times, appears earlier than the third day. The vesicle occasionally is perfectly characterized on the fourth day, and very often on the fifth: if in all other respects it afterwards proceeds regularly, the antivariolous security will be afforded. Sometimes the vesicle at the beginning, especially in adults, resembles a phlegmon, and will not put on the regular appearance until the eighth or tenth day; then, however, the depression and dark spot in the centre become evident, and the disease proceeds regularly. I have met with several cases in which it was impossible to decide sooner than the tenth day; I saw it dubious until the twelfth in a few instances. Particular attention to the formation and falling off of the scab will assist our judgment very much in such cases. The disease, as already mentioned, arrives at its acme on the eleventh or twelfth day;—frequently, however, it is postponed two or three days.

The colour of the vesicle varies from an opaque or pearly white, to a straw, or deep blue, approaching to a livid. This is of little moment, provided the fluid be found perfectly colourless and transparent; the degree of exposure to the air has much effect upon it. The areola is alleged frequently to be wanting, and that it is not indispensable in the genuine cow pock, which opinion would appear to be confirmed by the experience of the

Vaccine Pock Institution, London, by Mr. Ring, Mr. Fournier, of Brussels, Dr. Colon, of Paris, and many others. I have seen the areola very faint, but seldom entirely absent; nor should I be satisfied with any case unattended with areola and the normal circumscribed hardness, which I consider as indicative of constitutional vaccine affection, *and I know of no other certain proof of perfect vaccination.* Sometimes the areola spreads to a great extent upon the arm, reaching to the shoulder and elbow; this has an alarming aspect, but is not attended with any danger, and with very little pain in proportion to its appearance; it remains only a day or two. It occasionally is tardy in forming, and remains longer than usual; —it will be wanting or suspended for a while if the person has previously received the infection of small pox, or if he be seized with any other eruptive fever during the early stage of vaccination. Exhausting the vesicle too freely of its contents will often prevent the appearance of the areola.

The cow pock has, in some instances, lain dormant in the system for several days, and this, I think, is most apt to happen where the infection has been long preserved. I have met cases where no inflammation occurred until about the twelfth day. Mr. Bryce has known it deferred for a fortnight. Mr. Pearson records a case where it did not show itself for twenty days. Mr. Ring, in one instance, saw no appearance before the forty-sixth day. And the Vaccine Pock Institution records a delay of five or six weeks; but in six days after a second inoculation, a pock appeared at the former incision, and both proceeded alike. Infection lying thus dormant appears sometimes to be brought into action by a second insertion of virus. In 1807, a remarkable instance occurred, at the Cow Pock Institution, of suspension. A child was twice inoculated, apparently without effect; at the expiration of eight months, the operation was repeated in two parts of the

arm; both incisions inflamed and vesicated naturally. One of the cuts from the former inoculation began to inflame on the fourth day from the third operation, and ran a regular course, the vesicle, areola, and scabbing process being perfectly natural. The recently produced vesicles were accidentally rubbed off and ran on to ulceration. In all these cases susceptibility of small pox was found to be destroyed, and patients infected from them had a regular disease. When a second inoculation is to be performed, under such circumstances, I would advise not to take the same arm, lest extensive inflammation be the consequence. I have often seen the vesicle on the eighth day very slow, or even doubtful in appearance, and soon after regain the ground it appeared to have lost, and assume on the twelfth the standard character.

The vaccine disease sometimes suffers suspension of progress. The inflammation in such cases generally appears earlier than otherwise it should; then disappears, or remains stationary for a time, and afterwards resumes its course. Mr. Ring inoculated a patient at eleven o'clock, A. M. an inflammation arose on the arm the same evening, which almost entirely disappeared on the fourth day, when a true vaccine vesicle formed, the disease proceeded thenceforward as usual, and afforded a copious supply of active vaccine virus. On the arm of a child inoculated by Dr. Boyton, of this city, the usual marks of the infection having taken place, were perceived on the third day: on the fifth they disappeared; on the fifteenth he visited the child, and found a well marked vesicle, similar to that usually produced on the eighth day after inoculation. Mr. Ring, Dr. Sacco, of Milan, and others, record cases, in which a spurious vesicle appeared soon after inoculation, which increased for two or three days, then diminished, so as to be nearly gone on the fifth or sixth day, when the true vesicle appeared on the same spot, and ran its course without interruption.

When all the previous appearances have been well marked, it will occasionally happen that, at the desiccating period, pus shall be formed. Some imagine that the vesicle always undergoes such a change, I am convinced, however, that this opinion is erroneous, having repeatedly opened vesicles to ascertain the fact, and only remarked that the fluid was more viscid. When any pus is contained, it is probably the effect of local irritation. If the crust be torn off, or mechanically injured, an ulcer is often formed, which frequently, especially in scrofulous constitutions, proves difficult of cure. At a late period a ring of clustered vesicles may sometimes be observed around the part, more transparent than the original vesicle, and containing a limpid fluid.

Dr. Dupuytren (President of the anatomical department of the School of Medicine at Paris) thinks that the disease observes a shorter period in blacks, than in white people, which he attributes to the thinness of their cuticle; and Dr. Marshall is inclined to adopt his sentiments. Dr. Coxe, of Philadelphia, however, says he could never remark any difference between people of different colour, in that respect; and certainly we do not find that its progress is accelerated in children whose skin is less dense than that of adults. In those blacks who have been vaccinated at the institution, the vesicles ran the usual course—I should say, the progress was rather slow, and that there was less appearance of surrounding discoloration, owing to the opacity of the rete mucosum, but the surrounding hardness and heat are never absent.

Cæteris paribus, temperature has probably some influence on the vaccine. In summer, the disease often proceeds faster than in winter; and we are informed by Dr. Sacco, that the vesicle on the cow in Italy, resembles more that produced by inoculation on the human subject, in these northern regions: yet virus received from thence, occasioned no perceptible difference, when used in England.

To me it appears that extreme cold is more apt to retard, than great heat to accelerate, the vaccine process.

Whether eruptions partaking of the vaccine character, or resembling small pox, are to be enumerated or not, among the occasional symptoms of cow pock, is a question not yet satisfactorily decided, and which time and further experience can alone determine. Dr. Odier, of Geneva, relates a case of general eruption of vesicles, containing a fluid as clear as water, and each surrounded by a small areola: matter taken from them produced a disease of the usual kind without any eruption. Dr. De Carro vaccinated a child affected with *tetters;* these sores soon assumed the appearance of cow pock vesicles, and when they had run a regular course, the original disease was cured. He had another patient labouring under *crusta lactea*, on whom vaccine inoculation having taken effect, a copious eruption appeared on the affected parts; on the back where a blister had been applied, and on the scrotum, where it was excoriated by the urine, but none where the skin was sound the event was favourable. When there are any small pimples in the neighbourhood of the inoculated part, they have been known to assume a similar appearance. Dr. Adams mentions some instances of eruptions at Madeira, one of which, however, seemed to acknowledge, as a cause, the peculiar management of the patient. The Rev. Mr. Holt, Rector of Finmore, near Buckingham, vaccinated two children, one six, and the other ten years old, both had about one hundred vesicles in different parts of their bodies; with matter from these vesicles he inoculated eight children, and all had the mild form of cow pock, having neither any pustular nor general indisposition. Mr. Ceely mentions the case of a young lady, vaccinated fourteen years ago, who, during the decline of the cow pock, had a crop of secondary vaccine vesicles well marked on the face and trunk, twenty in number, all went through the regular course, leaving

characteristic scars. When the person has been exposed to a variolated atmosphere, as happened at the Small Pox Hospital, in London, pustules, apparently variolous, have been remarked to break out.

In 1801, Dr. Woodville, Physician to the Small Pox Hospital, published the result of his Inquiry into the Nature of Cow Pock, which essentially differed from Dr. Jenner in one important point, three-fifths of his patients being affected with variolous like eruptions. Dr. Jenner, however, proved that such eruptions never are produced by *pure uncontaminated cow pock virus*, and that the eruptions in Dr. Woodville's cases, which he considered secondary vaccine vesicles, were produced by variolous infection at the Small Pox Hospital. It was a most injudicious proceeding to expose the vaccinated patients to the infected atmosphere of the Small Pox Hospital. There can be little wonder that variolous eruptions attended the vaccinations carried on under such circumstances. Anne Bumpus, vaccinated at the Small Pox Hospital, had a well marked vaccine vesicle on the arm, and 310 variolous-like pustules over the body. Lymph taken from the former produced in Dr. Jenner's hands genuine vaccine, without any pustular eruption, while matter taken from the pustules on the body, excited in others a like general pustular eruption.

If the virus has been transferred to other parts of the body, by scratching the inoculated part, adventitious vesicles will sometimes arise; an instance of which is given in the Medical and Physical Journal, vol. ii. p. 306; there appeared on the labia pudendi, a confluent eruption of vaccine pustules. A similar vesicle was observed on the same part, and from the same cause, by the late Dr. Thomas Ferguson, of this city. And I saw two cases, where vesicles were thus excited on the under eye-lid, the areolæ of which extended over the anterior part of the eye, producing much pain and intolerance of light, which, however, soon disappeared.

A child by scratching a vesicle, and applying the virus to itchy pimples, will excite in the latter a vaccine action, and vesicular appearance, followed sometimes by troublesome ulcerations; and I have often observed external sores to become much worse during the progress of cow pock.

I lately saw a well marked vesicle on the chin, and another on the leg, but these and all such cases appear to me to be occasioned by transferring the lymph to other parts after scratching the inoculated arm.

The change produced on pimples in the vicinity of the place of insertion we may justly infer to proceed from sympathy;—where the cuticle is abraded, it is natural to suppose that general irritation may act with peculiar effect, and when sores or other diseases are present, analogy warrants us to expect, that a different constitutional affection supervening, should either supersede them entirely, or considerably modify their appearance. Dr. Odier's case affords less room for conjecture; yet, it by no means follows, that the eruption was a constitutional affection, because in others, a genuine disease was propagated from it, as we shall have occasion to show at more length hereafter. And I am very confident that future investigation will trace these eruptive cases to adventitious causes, which have hitherto been overlooked. Certainly eruptions are by no means usual concomitants of this disease. In upwards of 10,000 persons vaccinated by Dr. Jenner and his relatives no such occurrence took place. In many thousands whom I have inoculated at the Cow Pock Institution, in this city, and in private practice, I never met with a single instance of them, except as above mentioned; nor have such been observed in the private practice of any of the gentlemen who superintend that institution, nor in that of many other professional men whom I have spoken to on the subject. I have indeed frequently seen a rash, much like red gum, appear on the arm, and sometimes over the whole body, a few days after inoculation, which,

however, was of short duration—I think it is more common in warm weather. It is fortunately agreed on all hands, however, that if the inoculated part preserves its regular appearance and periods, these contingent circumstances affect not the specific properties of the cow pock.

4. *Deviations of greater magnitude ; or, suspicious cases.*

If a considerable tumour and redness appear on the second or third day, the inoculation will generally fail. Dr. Woodville judiciously remarks, that, when the inflammation advances rapidly to suppuration, about the sixth or seventh day, producing a festering or crustaceous sore, the case is not to be depended upon : early and violent inflammation is one of the most inauspicious appearances, at all times.

In some cases, a large pimple only, like a gnat bite, has been excited, which remained the usual time. In others, an irregular-shaped pock, followed by a yellow, rough, large, irregular scab has been produced. In one, a pock, resembling a mulberry, was formed. The vesicle, though broken at an early period, may afterwards pursue its ordinary course, and pass with regularity through all its stages, and afford perfect security to the constitution. More frequently, however, the vaccine virus is discharged, the characteristic progress of the vesicle interrupted, and the operation rendered altogether ineffectual. But could we be certain that the vesicle, immediately before the injury, was genuine, we might, perhaps, rely on the inoculation ; and experiments have shewn that irregularities such as the foregoing have occurred, and that, nevertheless, the susceptibility of small pox has been destroyed ; yet, when we observe these palpable differences, a due regard to the security of our patient, forbids us to trust to such cases.

The vesicle may be broken, and the crust forcibly removed, on the ninth or tenth day, succeeded by an ichorous discharge, or scaly crust, preventing the healing of

the sore; or the appearances may be regular, until the eleventh or twelfth day, when, perhaps, in consequence of the part being injured, the vesicle, instead of shewing any disposition to be converted into a crust, continues much inflamed, with an increase of the surrounding efflorescence, and terminates in ulceration, requiring much care and attention. Where a vesicle proceeds *regularly*, until the eighth or ninth day, and is then torn, and its contents evacuated, still it may be depended upon, *if the areola appears at the proper period*; otherwise, we should repeat the operation. Dr. Jenner relates the case of a boy whose arm was incrusted on the sixth day, with a ragged, amber-co-coloured scab, spreading and thickening for some days; when, at its edges, appeared a vesicated ring, after which the disease observed a regular course, accompanied with slight indisposition. Five persons were inoculated from this source: on one of whom no effect was produced; on another, a well-characterized vesicle, and the remaining three exhibited appearances similar to those on the boy. Dr. Jenner inclines to ascribe these anomalies to the circumstances of the patients having been people engaged in laborious exercises, and the parts suffering friction from the clothes. He thinks they may have been secured against the contagion of small pox, but had not an opportunity of putting them to the proof. I am of opinion, however, with Dr, Woodville, that such cases should not be depended upon.

Sometimes the insertion of vaccine lymph is followed by a slight inflammation, gradually increasing to the fifth or sixth day, when a pustule is formed, containing opaque matter. Every now and then the inoculated part proceeds regularly for a few days, when a watery discharge takes place, followed by a crustaceous sore; and about the eleventh day, the part is usually covered by a dark-coloured crust. I should distrust such cases.

Several years ago, I vaccinated two children of a lady

of rank. The arms slightly inflamed on the succeeding day, and during three following days, the inflammation increased. On the fifth, the vesicles burst, and continued to discharge a serous fluid. On the tenth, the inflammation more than equalled a half-crown piece, and there was slight fever, with pain in the axilla, in both. A brown scab appeared on the eleventh day, after which the inflammation subsided, but the crusts adhered for a long time. The insertion of recent vaccine lymph, at a subsequent period, produced, on both these children, genuine vesicles, which ran the regular course.

In the 6th vol. of the Medical and Physical Journal, we have two cases very similar to the foregoing : the patients were considered to be secure, yet, they took the small pox afterwards.

A more embarrassing irregularity has sometimes arisen, and which might easily deceive the inexperienced, or unwary. A vaccine inoculation shall be followed at the usual period, with an inflamed spot, gradually increasing, until the fifth day, when a minute globular vesicle makes its appearance, perfectly transparent, and containing a fluid equally so. The inflammation continues to increase, and the areola is formed about the ninth day. A crust, nearly similar to the genuine, succeeds, which usually remains two or three weeks. It even so well personates a regular disease, as to be often accompanied by constitutional symptoms ; but the circumstances of the vesicle never assuming the determinate size or figure, its margin not being turgid and wheel-shaped, the smallness and early appearance of the areola, and its subsiding sooner than natural, and the indistinct feel of surrounding hardness, betray its real character.

Extensive local inflammation, with febrile excitement sometimes, is calculated to deceive the inexperienced ; but where other appearances are not satisfactory, we should not promise security. Such severity of symptoms more frequently attend spurious cases.

If a vaccine vesicle proceeds regularly, until the eighth day, and then dies away, it is not to be relied upon.

If, instead of the accustomed crust, a brittle one, of a light brown colour, be formed, circumspection is requisite: it may indeed have proceeded from mechanical violence, the foregoing stages of the disease having been regular; but it induces a suspicion of some essential antecedent deviation.

Of all the before-mentioned irregularities, that is by far the most frequent, which is marked by the vesicle arriving prematurely at its acme, (accompanied with an early areola) and finishing its course much within the usual time.

Some place their chief dependance on the formation of the vesicle; others, upon that of the areola: but it may be assumed as a maxim, that, whensoever any remarkable deviation, from that course which genuine cow pock ought to pursue, has happened, we should regard it with distrust, and resort to a second inoculation, if we have opportunity; while, without reserve, we warn our patients of their danger.

5. *Distinctive marks of spurious Cow Pock; with suggestions of some of its probable causes.*

There are two kinds, principally, of spurious vesicles: the first bears a strong resemblance to the true, in several respects; its edges are commonly elevated; its contents nearly limpid—and it continues the usual time—but it commences with a creeping scab, of a pale brown, or amber colour, making a long, slow progress, sometimes unattended by any efflorescence; the vesicle is more transparent, and the pellicle is generally thinner, and easily torn. This Dr. Jenner has particularly noticed, and he ascribes it to the virus used for inoculation, having been previously exposed to a degree of heat capable of decomposing it.

The second kind appears early, and increases rapidly—

is elevated in the centre, and globular,—with more or less of the appearance of a common phlegmon; and, when punctured, there issues opaque fluid, resembling what is produced in any other festering sore. It is more easily ruptured: at the sixth or seventh day, it generally runs into a perfectly purulent state. The areola is irregular or notched, resembling a large blotch—has a fiery or livid aspect—is not shaded off into the surrounding skin—and, as Dr. Cappe observes, seems rather to lie under, than upon its surface; while, at the same time, it is less extensive—nor is the hardness around it so evident. A ragged scab prematurely covers the vesicle; or, when the black crust should form, a yellowish sore appears drying and breaking out again, with an oozing from under it.

Imperfect vesicles are in general smaller, more globular than the true vaccine; they have not the turgid, convex margin,—but a somewhat puckered base, appearing to slope off into the surrounding skin; they have not a cellular structure; contents not clear transparent lymph,—but a straw-coloured, opaque, or purulent fluid; the areola not defined, nor of so vivid a rose-tint, but raggedy and diffuse,—appearing about the seventh or eighth day, or earlier, as on the fifth or sixth, of a dark red colour, with less hardness than the true areola, and disappearing sooner; the succeeding crust is smaller, of a light brown or amber colour, irregular and friable, forms earlier, separates sooner, and leaves an indistinct, and not pitted cicatrix.

In some spurious instances, the whole arm inflames, a few hours after inoculation, and an extensive tumor is formed, before the fourth day. In others, a fluid is found to be collected earlier than we should expect, which is generally opaque. A small, irregular efflorescence occurs; or a considerable inflammation, and a premature scab. Such cases may originate from using improper matter, from external injury, from performing the operation with a rusty lancet, making too deep punctures; or they may have their foundation in the inaptitude of the patient's

system to give energy to the agency of the virus, whether from general debility, the presence of some other disease, or previous inoculation; and I think I have observed, that weak, ricketty, and scrofulous children are more liable to these imperfect and spurious affections than others.

Matter taken from an irregular or spurious pustule will frequently excite a similar disease, as was exemplified by the case of the Vienna nobleman, from whom infection propagated a spurious cow pock at Geneva. Of twenty who were vaccinated from this source, seventeen took small pox afterwards, and three died. Accidents of this kind happened in France, America, and England, in the early days of vaccination, and I fear have occurred in this city and kingdom.

It is worthy of note, that a regular disease may be generated from an imperfect case—in other words, a person may have cow pock as a *local* disease merely, and yet virus from his arm shall excite in others an efficient disease.* We have an interesting case of this kind in the Medical Journal for February, 1801. Like many other abortive cases, it was distinguished by its rapid course, which affords the most certain proof that the disease will be cut off in limine. We shall hereafter find that the same occurrence is not very unfrequent in small pox inoculation. I may here mention as a probable cause of an abortive disease, evacuating the contents of the pustule at too early a period; or draining it on two or three successive days. Some of the early failures may, perhaps, be thus accounted for.

Mr. Simmons of Manchester, (Medical Journal, vol. v. p. 135) observes, "that in those cases where either one or other of the above symptoms, (violent inflammation or ulceration,) particularly the former, has taken place in a severe degree, the future security of the patient against small pox, must be rendered somewhat doubtful." Here

* Mr. Bryce's test would deride the character of such cases.

he supposes the excessive inflammation cuts off the infection *in limine*, and so prevents the constitution from being affected; he therefore recommends, "when the inflammatory appearances on the arm greatly exceed the usual limits, that the vaccine inoculation should be repeated at a convenient distance of time, to guard against all chance of disappointment." This observation may, perhaps, merit some attention, though it is unsupported by any facts hitherto noticed; something analogous to it, however, takes place in certain cases of chancre.

I here beg to direct the attention of the junior vaccinator to the following extract, which I make from Dr. Jenner's original Instructions for Vaccine Inoculation:—"The vaccine fluid is liable, from causes apparently trifling, to undergo decomposition. In this state it sometimes produces what has been denominated the spurious vesicle—that is, a pustule, or an appearance on the arm not possessing the characteristic marks of the genuine vesicle. Anomalies assuming different forms may be excited, according to the qualities of the virus applied, or the state of the person inoculated; but by far the most frequent variety or deviation from the perfect vesicle, is that which arrives at maturity, and finishes its progress, much within the time limited by the true. Its commencement is marked by a troublesome itching, and it throws out a premature efflorescence, sometimes extensive, but seldom circumscribed, or of so vivid a tint as that which surrounds the pustule completely organized; and which is more characteristic of its degeneracy than the other symptoms, it appears more like a common festering sore produced by a thorn, or any other small extraneous body sticking on the skin, than a vesicle excited by the vaccine lymph. It is generally of a straw colour, and when punctured, instead of the colourless, transparent fluid of the perfect vesicle, its contents are found to be opaque. If the vesicle is not much disturbed by scratching in its course, it commonly terminates in a scab of a

pale brown or amber colour, and soft in its texture compared with that produced by the true vaccine vesicle. I have abundant testimony to prove that the fluid taken from a spurious vaccine vesicle thus excited, is capable of propagating and perpetuating its like. Indeed the vaccine fluid, even in a vesicle going through its course perfectly, if taken in its far advanced stages, is capable of producing varieties, which will be permanent, if we continue to vaccinate from it. Medical practitioners should be particularly circumspect when they inoculate those who have cuticular disease. The danger of insecurity would be at once obviated, if, on the appearance of an irregular vesicle, the disease were to be subdued by proper applications, and the patient then re-inoculated."

6. *Constitutional symptoms.*

As it has been asserted by Dr. Jenner, that those persons alone are unsusceptible of small pox, who have undergone the constitutional as well as the local affection of cow pock, and as this position is undoubtedly true, some of my readers may, perhaps, be of opinion, that an enumeration of the constitutional symptoms would, with more propriety, have formed part of the description of a regular course of the disease, than to have been reserved for a separate section. But when it is considered, on the other hand, that the indications of the system being affected, are in the greater number of instances, very slight, if not imperceptible, and that in children, who must compose the majority of our patients, the numerous irritations to which they are subject from other causes, must render our decisions with regard to them very liable to error ; I apprehend it will be acknowledged, that a thorough acquaintance with the appearance of the local affection, and a strict attention to its progress, must be the primary objects of every man engaged in vaccine inoculation, as being the best, if not the only criterion we possess, to ascertain that the antivariolous process has

taken place. I have, therefore, deemed it more expedient to describe minutely the progress of local vaccine, unembarrassed with any details which might distract the attention, being anxious to impress upon the memory as forcibly as possible, the various appearances which it assumes.

While children are undergoing the cow pock, they are often attacked with bowel complaints, teething, &c. the symptoms of which begin at different times during the progress of the inoculation ; but, in general, we are informed, from the 5th to the 8th day, whereas the constitutional symptoms of cow pock most commonly occur from the 8th to the 11th day. If the progress of the local disease be slow, the constitutional affection will usually be slow also in appearing. According to my experience, the constitutional disturbance is not, under ordinary circumstances, proportionate to the intensity or extent of the vesicle and surrounding areola, being often slight, where local appearances are most fully developed, and *vice versa*, much sympathetic irritation existing where the topical affection is slight.

A papulous or vesicular eruption is frequently observed on the inoculated arm and trunk of the body, particularly the back ; and I have sometimes seen an eruption over the body, of red patches of an irregular form. I have not seen it appear before the 7th, nor after the 9th day. It generally precedes the areola, and is often attended with considerable febrile anxiety. In one case it was ushered in with convulsions, and in another with coma. This efflorescence occurs most frequently in delicate, scrofulous children, and in most of the cases there was more or less derangement of the stomach and bowels.

These eruptions I have found more frequent and copious in warm weather.

Dr. Woodville remarks, that when the areola does not commence until the 11th day, there will generally be more indisposition than otherwise.

At the period already mentioned, children are apt to be restless, and a little feverish, chilliness, and thirst affect some, and slight twitchings others: sometimes they have nausea and vomiting, sometimes pain and swelling in the axilla; this last symptom is more common in adults, and drowsiness more frequently remarked in children. Adults usually have the pulse accelerated, but the tongue is seldom foul, nor do they complain of thirst. An irritating rash, accompanied with intollerable itching, and much resembling urticaria, has been noticed occasionally at the Vaccine Pock Institution, where it is denominated *essera vaccina*. It has been remarked by some, that the constitutional affection is often most evident on the night of the eighth day. Mr. Ring mentions a case of casual vaccine, in which pain and swelling of the axilla, with other symptoms denoting constitutional disease, appeared before any inflammation or even pain took place in the hands. I inoculated a patient at sixteen, who complained of considerable pain in the part for several days after the operation, the disease, however, was very well marked.

During the progress of cow pock, children are sometimes attacked with diffuse inflammation of the arm, forearm, and hand, extending to the shoulder, and sometimes to the chest and upper part of the trunk, and, in two cases that I witnessed, over the entire body, threatening a fatal issue. There is fever with great restlessness, and sometimes coma. These appearances occur at the time the areola should shew itself, (and every now and then they seem to be an extension of the areola,) sometimes not till a later period. The axillary glands inflame and sometimes suppurate. The remedies I use are a combination of calomel, James's powder, and Dover's powder, in small doses, frequently repeated. Embrocations of aq. ammon. acet. and decoct. papaver, and the warm bath—sometimes I found bark and cordials necessary.

Sometimes, particularly in children who have the skin

in a delicate and highly vascular condition, and of a strumous habit, the vesicle, about the tenth or eleventh day, bursts—inflammation takes place and extends—pustules appear in the neighbourhood—abscesses form—the axillary glands inflame and often suppurate. With these appearances there is often much constitutional disturbance, but notwithstanding the unfavourable aspect of the case, matters soon improve; the sores heal kindly, and without leaving any marks, except a small irregular cicatrix. A gentle opening medicine, and mild saturnine applications are the only remedies I have used.

Besides the above mentioned symptoms, denoting general affection of the system, convulsions have occurred in a few instances. Mr. Hutchinson, of Manchester, relates two, which preceded the acme of the disease, the children were healthy, and of a strong muscular fibre: both recovered. A case of convulsions supervening on the eighth day, occurred at the Institution House after it was opened: the child was of a similar habit of body, four months old; I saw him a few hours previous to the attack, when he appeared very well, though, as I was informed, he had passed a restless night; the arm had the usual appearance. The convulsions recurred with increased frequency and violence for seven days, the child, however, recovered: in this case the progress of the areola was unusually slow, and for two or three days seemed quite stationary. A similar case occurred to the late Dr. Clarke, and several cases have since occurred in the practice of the Institution, between the eighth and eleventh days—all recovered. In the Medical Journal, vol. ix. p. 361, we find reports of two cases of convulsions during vaccination, in one, the patient was three months old, the disease proceeded regularly until the eighth day, when there came on vomiting and diarrhœa, succeeded by convulsions, and the child died on the following day. In the other, a girl, appearances were favourable until the ninth day, she was then seized

with the same train of symptoms, which continued six weeks, and terminated fatally. The Nottingham Vaccine Institution records a case of fatal convulsions occurring on the 9th day. Mention of cases accompanied with epileptic fits, is also made in the Report of the Vaccine Pock Institution. In one, fever attended with diarrhœa appeared on the eighth day, continued till the twelfth, and fits occurred on the tenth; there was only one vesicle and that without areola. In a few others, the fits attacked on the fourth, fifth, and six days; all recovered.

Dr. M'Keever has communicated the case of a child vaccinated by him. The arm presented the usual regular appearance on the eighth day. On the eleventh night, however, the little patient was carried off suddenly by a fit of convulsions. The Doctor adds, that this child had a pallid, unhealthy look, but no well defined ailment.

It was very doubtful, whether in any of these cases the fits owed their accession to cow pock, or to some other accidental cause, as teething, affection of the bowels, &c. Mr. Hutchinson admits that in those related by him, other adequate causes were present. In one of those which occurred at the Institution House, the convulsions were evidently produced by costiveness, which resisted the action of the strongest purgatives for several days; at length, however, a copious discharge of hardened fæces procured perfect relief to all the symptoms. Dr. Clarke also was clearly of opinion, that in the case which occurred to him, the convulsions proceeded from a most obstinate state of constipated bowels. It appears pretty evident, from a more particular account of the fatal cases, given in a subsequent number of the Medical Journal, that the event was to be attributed to a diseased state of the bowels. Mr. Duke of Suffolk Street, London, had a patient attacked by convulsions, but the child was at the age of teething; the accustomed irritation at which period seems also to account for those instances mentioned in the

Report of the Vaccine Pock Institution. Were convulsive fits liable to be excited by cow pock, I formerly thought it more than probable that we should meet with them oftener. I was, therefore, inclined to consider their appearance during its progress as merely accidental. Subsequent experience, however, has led me to believe that in some cases, at least, convulsions are the effects of constitutional vaccine action. During the last two years I saw three cases, and all occurred about the eighth day. Indeed almost all the cases of convulsions I have seen, happened between the eighth and tenth days.

The progress of cow pock is sometimes interrupted by other complaints. Dr. Jenner records a case, in which scarlatina anginosa appeared on the eighth day after cow pock inoculation. The inflamed and hard areola was suspended until the scarlatina had retired from the constitution. In another instance taken notice of by the same author, the activity of cow pock overcame the influence of scarlatina, after the eruption had been present for twelve hours, and pursued its regular course for four days, when the effloresence on the arm began to die away, and the vesicle to dry up, the symptoms of scarlatina returned and continued the usual time. In the Medical Journal, vol. ix. p. 370, we have an account of the suspension of vaccine by varicella, and when the latter declined, the former resumed its course.

I have seen several cases of measles occurring during vaccination, and remarked that where the eruption appears before the areola, the vaccine is suspended till the measles finishes its course, and then proceeds regularly. The like appearances I have noticed where scarlet fever supervenes during vaccination. I lately witnessed a case where the scarlet eruption appeared on the seventh day of cow pock; the latter was suspended till the former finished its course. In this case the vaccine vesicle and areola

were suspended from the seventh to the twelfth day, after which they ran the usual course.

Pustular and vesicular eruptions are more apt to *modify* and *derange* the character and appearance of the vaccine, than merely to *suspend* its progress.

It will be often difficult to ascertain the presence of the constitutional symptoms of vaccine, especially when any irregularity, local or general, has occurred. We must also hold in remembrance, that imperfect or spurious cases often exhibit strong indications of the system being affected ;—such difficulties, we must expect, will occasionally present themselves as may embarrass the most intelligent practitioners. I can only repeat, that where the smallest doubt is entertained of the efficacy of the operation, it ought to be repeated; if an opportunity is not afforded us of performing it, we should disclaim all responsibility for the case.

Many persons are too apt to suppose, that where pure vaccine lymph is used we must have a genuine vesicle; and when expressing any doubt upon a case of cow pock, I have often been answered in some such words as these, "Oh, it must be good, for I used the best infection." Now it should always be borne in mind that the purest cow pock lymph may, from circumstances connected with the state of the recipient at the time, produce an imperfect vesicle, of which we often see examples in practice. I have seen infection from the same source produce in one child a genuine, in another a spurious vesicle, and in a third fail altogether.

A re-inoculation with cow pock matter may suffice as a test, because, if the first inoculation has been effectual, the second will differ in its progress, appearing and terminating earlier; the scab also is different, and there seldom remains a cicatrix. Should active vaccine virus fail on a second trial, the operation must be repeated at a more distant period.

Four cases occurred to me of persons resisting both cow pock and small pox on repeated trials; and I have known children resist cow pock at one period and take it at another. The same has been remarked with regard to small pox. A lady of my acquaintance, the mother of a large family, who had been vaccinated when an infant, resisted the variolous infection for several years, though frequently exposed to its full influence while attending members of her family ill of it in a confluent form; lately, however, without any particular exposure, she has suffered a severe attack of the complaint.

Mr. Bryce has proposed a test of constitutional affection, namely, by double inoculation; thus, having inserted the virus into one arm, we repeat the operation on the other, five or six days subsequently, with lymph taken from the primary vesicle, and if the first has exerted its specific action on the system, the second inoculation will thereby be so far accelerated, that both vesicles will arrive at maturity, and die away nearly about the same time. The proper time for the second operation must depend on the progress made by the first inoculation; he supposes in general that between thirty-six and forty-eight hours before the areola of the first inoculation begins to appear, is the most proper period, which, in a perfect case, nearly answers to the sixth day. The second, in general, produces a smaller vesicle than the first. Mr. Hugo, of Crediton, long practised vaccination in this manner. Whether or not the validity of this test be fully established I cannot take upon me to affirm; few, I believe, have adopted it, and the experience of several does not seem to correspond with Mr. Brice's. Inoculations performed at the Vaccine Pock Institution on the eighth day and later, produced nothing more than a pustule like a common phlegmon, quite unlike cow pock, and often no inflammation at all was perceived. And Mr. Kelson, Seven Oaks, England, observes that if a person be inoculated with

vaccine lymph, and the operation be repeated a few days afterwards, if the first has taken effect, the second disappears. Experiments, however, made at the Cow Pock Institution have fully corroborated Mr. Bryce's sentiments upon this subject. The secondary vesicles in those trials were smaller than the first, covered with a thinner pellicle and accompanied with less surrounding efflorescence. The scabs were not so transparent, but of a paler colour, and in falling off, left an indistinct cicatrix.

This practice of *testing* was probably first suggested to Mr. Bryce by a remark made at an early period by Mr. Hicks of Eastinglow, the first gentleman who submitted his children for vaccination to Dr. Jenner. Mr. Hicks became an early convert to cow pock inoculation, and practised it successfully. In a slow or doubtful case he repeated the operation a *few* days after the first insertion of lymph, and he remarked the second vaccination to make "immense strides to overtake the first." Surgeon John Pearson proposed and practised the test at the same time, but he does not appear to have known of Mr. Bryce's proposition.

Convinced of the advantages of Bryce's test, I never fail to use it, where I can overcome the prejudice parents have against "cutting" their children a second time. When correctly conducted, it will, in my opinion, give every security against future attacks of small pox which it is in the power of vaccination to afford; but if the second inoculation be postponed beyond the sixth, or beginning of the seventh day, in the ordinary course of the affection, the characteristic test will not be obtained, and hence its failure, as performed at the Vaccine Pock Institution, and other places, on the *eighth* day, and later. It is greatly to be regretted, that its general adoption at public institutions is prevented by the irregularity of the lower orders in returning at the proper periods to have their children examined. I look upon it as decidedly

preferable to periodical re-vaccinations, because it affords more satisfactory evidence of *constitutional vaccine action.*

A *local* cow pock vesicle may, as already remarked, be produced, which will not secure the patient from the contagion of small pox, although virus taken from such a vesicle may in future inoculations excite a perfect disease.* The like has been observed in small pox, a local affection, generating an efficient disease in others, though the person from whom the infection was taken received no benefit by the inoculation—an example of which may be found in the Tran. Coll. Phys. London. Even virus taken from a local small pox, after cow pock, will have the same effect. And we know, that on nurses, and people who have close intercourse with patients labouring under variola, eruptions have appeared though they had previously gone through the disease.—vid. Rosenstein, Kirkpatrick, &c. From these also, active matter might be obtained.

It is not to be expected that the previous infection of vaccine should entirely supercede that of variola. Where a person who has previously had cow pock, is inoculated with small pox,—appearances will generally ensue at the point of insertion; an inflammation arises, increasing to the sixth or seventh day, and sometimes till the tenth, with a red efflorescence. In one case, Dr. Clarke saw it increase till the fourteenth, but it then disappeared. The pustule rarely forms an abscess, resembling more a hard tumor in the flesh. Sometimes, a transient sickness is experienced, with pain and stiffness in the arm; or an eruption of anomalous pustules, which do not arrive at maturity: and, when used as a test, it is rather desirable, than otherwise, that such symptoms should occur as may prove that the patient is susceptible of the local affection only. Some-

* A knowledge of this fact should lead to the universal practice of Bryce's test of constitutional affection.

times, as happened to one of my own children, an eruption like measles appeared for a day, attended with fever.

Slight fever, uncccompanied with any eruption, has succeeded the insertion of variolous matter.

I have seen an eruption of small, hard tubercles attended with fever, which disappeared in a day or two.

It has been asserted, that these appearances are more or less extensive, according to the distance of time between the vaccination and the insertion of the variolous matter, as if the preventive power of cow-pock gradually wore out ; but Dr. Willan, and the medical gentlemen of the Inoculation Hospital, and of the Vaccine Pock Institution, in London, proved the opinion to be incorrect.

But there are many instances on record of fever and eruption being induced by the insertion of variolous matter, in those who previously had the small pox.

It is a singular circumstance that when a person is inoculated with the cow pock, or small pox, who has previously had either of these complaints, or whose constitution is not disposed to receive the infection, the local inflammation will appear sooner than otherwise.

Independent of the anti-variolous power, justly attributed to cow pock,—it is asserted to have other material effects upon the constitution. These may be divided into *prejudicial* and *salutary*.

It has been accused of exciting latent complaints, and of inducing others, with which the system would not otherwise have been affected. Troublesome eruptions on the skin, and obstinate glandular swellings, have been laid to its charge; and, where the seeds of scrofula lie dormant in the constitution, it is said to have roused them into action. Such accusations are proved, by ample experience, to be totally void of foundation. If a child who has gone through the cow pock, be seized, several months after, with any complaint, no matter what, it will be supposed to proceed from thence. Being requested to inoculate a

child with cow pock, the operation was for some cause postponed; meanwhile, the child became affected with tumors in different parts of the body, which suppurated, and ran into ulceration, and, becoming quite emaciated, died in a few months. I remember another instance, of a child, who was to have been vaccinated by a friend of mine, being seized with convulsions, on the day previous to the intended operation, and expired in a few hours. Now, had these children been inoculated, can there be a doubt, but that their deaths would have been attributed by many to the cow pock, and their cases have been descanted upon very learnedly, and at great length, by those who feel it a pleasure, and their interest, to avail themselves of every opportunity to depreciate this most beneficial practice? These occurrences should warn us against ascribing effects to different causes than those which really produced them.

I am convinced, from long experience, that the supposition of cow pock exciting various kinds of unsightly and obstinate cutaneous complaints, is without foundation. The result of Dr. Willan's experience is equally against the supposition; and the Register of Patients, kept at the Public Dispensary in London, satisfactorily proves that cutaneous eruptions have not increased, since the publication of Dr. Jenner's Discovery.

The Gloucester Infirmary—one of the most extensive county Hospitals in Great Britain, affords satisfactory evidence on this point. It is situate in a country through which casual cow pock has been prevalent, from time immemorial. Many hundreds, among the labouring people, have had the cow pock since the establishment of the infirmary, "*and that more severely than is generally the case in artificial vaccination; and yet, not a single patient, in half a century, has applied to the infirmary, for the relief of any disease*, local or constitutional, which he or she imputed, or pretended to trace to cow pock;" and we know

the *casual* cow pock, being more virulent than the *artificial*, would be more likely to excite eruptive diseases.

Jenner, Ring, Moreau, and many others, whose experience entitles them to give an opinion upon this subject, confidently assert that,—so far from injuring the general health, or inducing the complaints alluded to,—the effects of cow pock, in improving the constitution, and removing several diseases, particularly those of the skin, have, in many instances, appeared to them remarkable.

A case occurred to Dr. Jenner, of a child whose face was, for two years, involved in one general, thick incrustation, which resisted all the usual means. Vaccination, by a single puncture in each arm, had the effect of removing the complaint, in two or three weeks. Dr. Coxe, of Philadelphia, mentions a case of tinea capitis cured by it; and Mr. Ring, as well as other writers, give several cases of a similar kind.

Dr. De Carro's experience tends to confirm the advantages of vaccination, in cutaneous affections. He records the case of a child, seven years old, who was relieved by it, from an herpetic eruption, over the whole body, of *three* years standing, for the removal of which other means had been tried in vain.

The committee of vaccine inoculation, at the Louvre, found that matter taken from vaccine patients, labouring under other cutaneous diseases—such as the itch, and small pox—did not communicate any disease but the cow pock ; and they believe that the vulgar opinion, relative to the inoculation of other diseases with the cow pock, is without foundation. I believe the itch, or other chronic eruptions of the skin, are not communicable with cow pock ; but I should not think it prudent to take vaccine virus for inoculation, from the arm of a patient labouring under small pox, or indeed any of the complaints I have mentioned.

Mr. Watt, of Paisley, records a case of a gentleman

who, by accidentally applying some vaccine virus to his nostrils, produced there two pustules, by which he was completely cured of a very obstinate soreness in his nose, of several years standing. "May not the insertion," says he, "of the vaccine matter, in some inveterate ulcers, produce a permanent cure ?"*

Four years ago, a child, with a nævus maternus, on the fore arm, the size of a shilling, of a vivid red colour, and prominent, was brought to the Cow Pock Institution, for vaccination. I inserted vaccine lymph in the centre of the excrescence; and, at the same time, performed the like operation on the usual part of the same arm. Vesicles formed in both places, and ran the usual course. The nævus afterwards gradually faded; and in six months, there was scarce a vestige of it left. I since tried it in four cases, and succeeded in two. Dr. M'Keever succeeded in removing a small nævus in the forehead, by the insertion of vaccine lymph.

Many instances might be adduced in support of the opinion entertained by those authors, of the efficacy of cow pock, in removing several diseases. I have seen two or three cases in which children seemed to have been relieved from obstinate eruptions by it; but being averse to inoculation, when other diseases are present, for reasons which I shall hereafter state, I cannot, from my own experience, give any satisfactory opinion on the therapeutic agency of cow pock. I shall not require any further benefits from it than those already established; but will rest content with the assurance that, without injuring the constitution in the smallest degree, it affords exemption from the contagion of small pox. To be more convinced of the fact, that cow pock is not prejudicial to the general health, I frequently made inquiry upon the subject, and never, in a

* An ingenious medical practitioner of Calcutta, suggested lately the application of vaccine virus to cancerous sores; the experiment has not, I believe, been yet put in practice.

single instance, have I detected any unpleasant constitutional symptom imputable to it.

7. *Inoculation.—The mode of conducting it, and circumstances to be attended to in the state of the patient. The medical treatment of the complaint. The best mode of preserving the virus, &c. &c.*

It unfortunately happens, that the apparent facility in the management of cow pock inoculation has, on several occasions, led practitioners to commence the practice without any previous knowledge of the subject, and to conduct it with the most unwarrantable carelessness and inattention. The dangerous consequences of such conduct are too apparent to require any comment.

I have heard many assert, that spurious pustules cannot be mistaken for genuine; but we have good reason to know that such mistakes have been too often committed. The Parisian practitioners, who seem to have attended a good deal to this subject, acknowledge that, at the commencement of their practice, they often confounded the spurious with the true vaccine vesicle; and Dr. De Carro of Vienna, who is justly styled the Jenner of the Continent, was not ashamed to make the same confession. Dr. Jenner says that the most experienced persons about cows have often been mistaken as to the genuine casual cow pock on the animal.

In conducting the inoculation of cow pock, several circumstances are to be attended to. These I shall consider under distinct heads. And,

1. *State of the person to be vaccinated.* Although cow pock inoculation is perfectly free from danger, and may be practised with the greatest safety at all ages; still, however, I should be inclined to recommend some attention to the age and general health of the person to be inoculated. Children have been vaccinated a few hours after birth, and have gone through the disease in its usual mild form.

I myself inoculated a child a few hours after birth, and another the day after it was born, and several within the nine days; of the propriety of which, however, I am now strongly disposed to doubt, unless the existence of small pox contagion in the neighbourhood, or some such cogent reason, renders the operation immediately necessary. We know very well, that infants for some days after birth, are subject to dangerous complaints in the bowels, to what are called *nine day fits*, which invariably prove fatal, and to many other disorders which are by no means free from danger. Therefore we should not, if possible, inoculate a child till it be at least a month old, lest we bring unmerited censure on the cow pock. It may also be remarked, that as new-born infants are very irritable, and much disposed to febrile complaints, the local inflammation may produce unpleasant consequences; nor can we determine what, in certain cases, may be the effect of introducing cow pock virus into such tender irritable habits. And I believe it will be found that new born infants do not receive vaccine infection so readily as those more advanced—at least this is consistent with my experience. The same was observed in the inoculation with small pox.

I have witnessed many remarkable instances of new born infants resisting the infection of scarlet fever, typhus, and other infectious complaints.

Dr. Heim, in his Treatises on Small Pox and Vaccination, in Wertemberg, gives the result of numerous cases tending to prove that cow pock is not so well developed in early infancy; that, in fact, an immunity from cow pock infection may, to a certain extent, then exist, and that, therefore, *too early vaccination of children cannot be considered proper in all cases, and especially within the first year.* I do not consider the opinion here propounded by the learned Doctor well founded. By vaccinating between the sixth week and fourth month, the period which

was formerly found most successful for variolous inoculation, we avoid, on the one hand, the danger from complaints of early infancy, and on the other, the critical time of teething; and it should be borne in mind that infants of a more advanced age are apt to rub off the vesicles, and thus render the operation abortive.

Dr. Collins communicated to me an interesting case of an infant, eight weeks old, who, though very little out of doors, once or twice in the nurses arms, and as often in a carriage, took small pox in a confluent form, and died on the eleventh day. The father, mother, and the nurse, who suckled the baby the whole time, had been all vaccinated in infancy, escaped, though they were constantly over the diseased child. The Doctor vaccinated the lady and gentleman on the day the child died, and they had good vesicles; but having been so long exposed to the infection before the operation, the Doctor thinks they were already proof against it.

2. *Dentition.* The period of teething has been mentioned as an improper time for inoculation—children being said at that time to be in a very irritable state, and subject to fever from slight causes.* If the subject be in any degree indisposed, I certainly would not perform the operation; otherwise I can see no objection to it. During the continuance of any feverish complaints, I would rather decline inserting the virus, lest the anti-variolous process should be deranged, as I have known to happen, or entirely prevented.

3. *Eruptions on the Skin.* Children are subject to many chronic eruptions on the skin. If, in such cases, they are inoculated, being very restless, and the skin itchy, the vesicle is more liable to be torn off, and the part to run on to troublesome ulceration, before the constitutional affection has taken place; they are apt also to

* Dr. Heim states that within five years, six children died during vaccination, "from the more energetic progress of the dentition."

apply the virus which they have rubbed on their fingers, to other parts; therefore in such subjects, great attention will be required to preserve the vesicle entire. If the eruptions be in the neighbourhood of the eyes, the objection will be still greater; for we are informed by Dr. De Carro of a case under his care, where the scratching of such eruptions with the fingers, embued with vaccine virus, produced so much inflammation, as to occasion very serious alarm for the loss of sight. Under such circumstances, I am inclined to postpone the operation, unless the small pox be in the neighbourhood.

The eruptions which I have found most apt to interfere with the regular progress of cow pock, are herpes, scaly tetter, ringworm, and inveterate itch. Dr. Jenner at an early period directed the attention of vaccinators to the influence exerted by eruptive diseases on the vaccine; and frequently in his correspondence with me, expressed great apprehension lest want of due attention to the rules he laid down upon the subject should lead to fatal mistakes. "Those herpetic affections," says the Doctor, "which so frequently appear among the children of the poor, and which are evidently contagious, often prevent the vaccine virus from producing its correct action. The skin, although it be apparently sound at the point of insertion, is, nevertheless, so influenced by the disease, as frequently to baffle all our efforts to produce a correct pustule, (vesicle,) and consequently to secure the constitution from the contagion of the small pox. The eruptions I allude to, for the most part, correspond with those of the second order of cutaneous diseases, described by the ingenious Dr. Willan, under the term *Psoriasis Diffusa*. The face, the eye-lids, the tender skin behind the ears, and particularly the scalp, are the parts most commonly affected; but the limbs and body not unfrequently exhibit the same appearances. I frequently find," adds the Doctor, "when a child has a scabby face, especially if it be accompanied

with tinea capitis, or papulous eruptions, that the purest vaccine virus will produce a pustule, that will never contain limpid matter, but throughout all its stages, its contents will be purulent. If I inoculate from this source, almost to a certainty I produce a similar pustule; the scab which succeeds, is not hard and dark coloured like the common vaccine scab, but soft and of an amber colour, like that of the small pox, and the whole progress of the disease is accelerated."

In another place he observes, " I do not mean to say, that the pustule (vesicle) is always imperfect, and not effective, when the inoculated patient has this malady; on the contrary, it is sometimes perfectly correct, and much more frequently so when it has been of long standing, than when in its recent state; and what is remarkable, the disease is then (when of long duration) sometimes swept entirely away. I have noticed this impediment to the perfect formation and progress of the vaccine pustule (vesicle) in my general correspondence for more than two years past, (1804,) and conceive it to be a more frequent source of spurious pustule (vesicle) than any other, or, indeed, than all the rest united."

Some time ago I inoculated a healthy looking child with recent vaccine lymph. On the eighth day there appeared a straw coloured vesicle, surrounded with an irregular patch of areola; the part being itchy, the child tore the vesicle, and there soon succeeded a yellowish soft scab. This irregularity was connected with a large herpetic patch on the scalp, which I had not observed before inoculation; but which being removed by proper applications, a subsequent insertion of lymph produced a genuine vesicle, which ran the regular course. Upon another occasion, I vaccinated a child, the small pox being in the neighbourhood, who had a pustular eruption about the mouth and nose; and, as I predicted, a yellow vesicle and premature areola appeared, which being rubbed off,

the part was soon occupied by a festering sore, the eruption being removed by saturnine remedies, another trial with vaccine lymph produced the regular vesicle. The like result followed the vaccination of a child under cure for scrophulous ophthalmia.

With the exception, perhaps, of red gum, there are few eruptions which will not be found in practice to interfere more or less with the progress of cow pock, and therefore, we should abstain altogether from vaccinating children while affected with cutaneous eruptions. And the infection may be deteriorated by passing through a subject with a diseased skin. Parents are often too ready to conceal eruptive complaints on their children, and, therefore, we should make particular inquiry before we vaccinate, to see that the patient be perfectly free from eruption.*

Experienced inoculators for the small pox were fully aware that their failures to communicate that disease by inoculation, was sometimes occasioned by herpetic eruptions; and I well recollect Mr. Turkington, an experienced inoculator for small pox in this city, many years ago, saying that it was useless to attempt inoculating a child with a "foul skin." It may, however, be well to remark, that although it is a good general rule, as I am satisfied it is, to avoid vaccinating where there is any eruption present, yet there is sufficient evidence on record to prove, that vaccination under such circumstances has been sometimes safely and beneficially practised. In the earlier stage of these eruptions, there is an inflammatory state of the skin, with symptomatic constitutional disturbance, capable of deranging or modifying the vaccine action. In the more advanced stage, however, the complaint assumes a chronic character unattended with cuticular irritation or any diseased action in the system. In the former case the constitution is not in a state to receive

* Vid. Dr. Drew's cases, Appendix.

the vaccine infection, which in the latter is permitted to exert its protective influence.* In this way I would account for the conflicting opinions of practitioners respecting the influence of eruptive diseases on cow pock.

Scrofula. The presence of this complaint is no objection to vaccination; but here also, great care is necessary to preserve the vesicle, for in such persons it is very apt to be torn off, and a troublesome ulceration to ensue.

Pregnancy. "In pregnancy," says Dr. Pearson, in his Treatise on the Cow Pock, "the inoculated small pox is so commonly mortal to the unborn, in every period of gestation, that no prudent practitioner would chuse to inoculate under these circumstances, but with the view to escape taking the disease by effluvia, in the casual way." And in his Essay on the effects of variolous infection in pregnant women, in the Medical Commentaries for 1795, he says, "in about twenty cases to which I can refer of the natural small pox, under similar circumstances of pregnancy, the disease proved fatal to three fourths, or four fifths of the women, and to a still greater proportion of fœtuses." It is, I believe, generally supposed that a pregnant woman, who has already had the small pox, may expose herself with impunity to the contagion of that disease. As to herself the assertion is well founded, but not so with respect to the infant she carries; for we are informed by Dr. Mead of a pregnant woman, who, sometime after nurse-tending a child ill of the same disorder, was delivered of a dead child, covered with variolous pustules.

Several instances are on record of women being inoculated with cow pock during pregnancy, all of whom had the disease in its usual benign form. Mr. Ring, indeed, mentions the case of a woman, ten weeks pregnant, who aborted after being vaccinated; but as the accident did not happen till twenty-four days after the insertion of the

* I have already referred to cases in which vaccination removed eruptions of *long standing*.

virus, and as this patient had miscarried four times before, it seems more than probable that the accident could not be ascribed to cow pock. I have successfully vaccinated pregnant women, and see no danger likely to arise from the operation at any period of pregnancy.

Seasons. Vaccine inoculation has been practised with equal safety, in all climates, and at all seasons of the year. However, we are informed by Mr. Evans, that those who were inoculated during the prevalence of a cold north-east wind, were more apt to have their arms much inflamed. The same holds good with respect to small pox. Mr. Ring and others suppose, that either heat or cold, when excessive, is capable of aggravating the local, and consequently in some measure the constitutional symptoms. Dr. Waterhouse of America, considers cold, combined with dampness, worst of all. It has been observed at the Vaccine Pock Institution, in London, that in extreme cold weather the vesicle is smaller, slower in its progress, and accompanied with less inflammation than in warmer seasons, and that a rash is more common in summer than in winter. The same has been observed at the Cow Pock Institution. Dr. Adams found that the disease was suspended during the blowing of the *Leste* wind in Madeira. It is well known that the *Harmattans* in Africa, and *Sirochs* in Italy arrest the progress of the infection. I have inoculated children during the extremes of heat and cold, in this climate, without being able to detect any variation from the usual mildness of the disease, except that it often observed a more rapid course in summer than in winter. Dr. Wood, who has had much experience in vaccination in India, reports that the hill climate and elevated situations are more favourable for vaccination than the plains.

Adults. In adults and those advanced in years, the cow pock is found to be perfectly mild and safe; the local and constitutional symptoms are, however, more troublesome

than in young children, they are more apt to complain of pain in the arm and axilla, of headache and general feverishness. In some adults inoculated by me, there was considerable pain in the part, and in the shoulder reaching to the elbow. I have inoculated some on whom I was not able to excite a regular, and well marked vesicle—instead of which there was produced a phlegmonic inflammation, attended with much pain and swelling in the axilla, which in a few days was converted into a conical scab, and in two or three cases considerable headache; yet these persons were convinced that they never had had the small pox. In others who said they had small pox when young, but without marks, I excited a bluish vesicle, of rather a conical form, with slight areola, which entirely disappeared in eight days, leaving the part covered with a horny scab. A conical vesicle without an areola appeared in some; or a bluish vesicle, with central depression and limpid contents, and slight areola; or an erysipelatous inflammation surrounding the punctured part, which became elevated and attended with headache, axillary pain, and fever, but no vesication. These appearances occurred in soldiers inoculated at the Cow Pock Institution. In an infant repeated insertions of the virus were followed each time by phlegmonic inflammation, producing more inconvenience than the true vaccine disease. Such cases have been mistaken for genuine cow pock.

People advanced in years are often unwilling to submit to inoculation for cow pock, thinking that as they have escaped the small pox so long, notwithstanding repeated exposure to it, they will keep clear of it during the remainder of their lives, and that, therefore, such precaution is unnecessary. Every day's experience exposes the absurdity of such reasoning. We have often heard of persons who have escaped the contagion of small pox until an advanced period of life, when they have caught it and perished. Mr. Ring records the case of a man who was inoculated with

small pox eleven times, and once taken to a patient labouring under it, and inoculated in both arms with a large quantity of recent matter, but to no purpose; yet this man afterwards caught the disease in the natural way. I was lately informed of a woman who nursed three of her children ill of small pox, yet escaped the disease until her 40th year, when she had a most severe attack of it. In Rosenstein, we find several cases of small pox in persons of from 50 to 80 years of age.

Repeated inoculation for small pox having frequently failed to communicate that disease, the person being thus left in great suspense, we may here try the cow pock with a great probability of success. A lady in Cork had been fourteen times inoculated for small pox, but ineffectually, she consequently remained apprehensive that one time or other she would fall a victim to it. The insertion, however, of the vaccine virus being followed by a regular cow pock vesicle, removed all her fears.

Previous exposure to small pox contagion. It has been supposed by Fordyce and others, that small pox manifests its operation upon the constitution in about fourteen days after exposure to its contagion. Could we ascertain this point decisively, we should be enabled in general, to supersede that disease within six days, by cow pock, which exerts its influence about the seventh or eighth day from the time of inoculation; but as we are frequently disappointed in this expectation, we should, although the vaccine may appear to have taken effect, be extremely cautious in giving an opinion until we are certain that the patient has undergone its action completely. As, however, some persons are more liable than others to be seized with contagious diseases, and that even the same person shows greater susceptibility of infection at one time than another; it becomes our duty to advise cow pock inoculation at any period of exposure, previous to the eruption of small pox, warning our patients, at the same time, of

the uncertainty of the experiment. Should we fail in our endeavours thus to supersede small pox, we shall have the satisfaction thereby to render it milder. Mr. Ring remarks that whatever has a tendency to prevent, must be supposed capable of mitigating the disease, and that the cow pock possesses this property, his experience warrants him in asserting, two thirds of his patients who had been vaccinated while exposed to small pox contagion, escaping entirely, and the remainder having the disease in the mildest form. The observations and experiments of Drs. Odier, Sacco, De Carro, and the Committee of Vaccine Inoculation at the Louvre, confirm this opinion, which is quite consistent with my experience, though, as we shall presently find, much depends on the period of vaccination at which the small pox eruption appears. I have inserted vaccine lymph in the arms of persons who had been in close contact with patients ill of small pox, occupying the same apartments or even the same beds, from two to eight or ten days. In the great majority of such cases the disease was rendered milder or altogether prevented. In the remainder the cow pock took no effect, and the small pox ran its course uncontrolled, sometimes proving fatal.

During my mastership in the Lying-in Hospital, 1817, a patient was admitted in labour, and covered with confluent small pox. Her infant being vaccinated a few hours after birth, and the cow pock having taken effect, it escaped the variola, though the mother insisted on keeping it in bed with her till her death, which took place on the eleventh day.

The Vaccine Pock Institution remark, that if the eruption of small pox occurs between the ninth and fourteenth day after vaccine inoculation, the cow pock will, to all appearance, go regularly through its different stages as well as the small pox ;* but that if the eruption of the latter

* While these sheets were at press, (1805,) a case occurred which seemed to corroborate this opinion. Two children, who were previously

appears before the period just mentioned, the cow pock vesicle will become stationary for a while, and then recede or assume the scabbing process. This, however, is not always the case, for there is an instance recorded by Dr. Barry, of Cork, where the variolous fever supervened on the third day after vaccine inoculation, followed the next day by a copious eruption of small pox, which did not at all seem to influence the progress of the vaccine disease. When under any of the aforementioned circumstances, one or other disease appears, we should endeavour to distinguish accurately which it is, lest we impute to cow pock, naturally mild, the severe symptoms which may belong to small pox.

I should say that small pox may appear at any period of cow pock, before the full development of the areola, previous to which we should not consider our patient secure from variolous infection. Where small pox is prevalent, we often see it attack individuals who are under the process of vaccination. In such cases we find that the constitutional and local symptoms, are much affected by the priority of the influence, which the variolous or vaccine infection, respectively, may have exerted on the constitution. Thus, I have generally observed, that in persons

exposed to small pox contagion, were vaccinated from the same source at the Institution House, on the 12th of April last. Upon one, the progress of the arm was perfectly characteristic till the 11th day, when there appeared an eruption of confluent small pox. Several pustules were observed through the vaccine areola, but which did not run into the vesicle, as in variolous cases. The inoculated part now assumed somewhat of the aspect of the small pox incision, yet the vesicle preserved a tolerably well defined margin. The ensuing scabbing process was not regular. Virus taken from this patient on the 8th day, produced in others the true vaccine, unaccompanied with any eruption. The child seemed likely to recover. The other infant afforded a most satisfactory instance of cow pock, and although he slept all the time with the small pox patient, did not receive the contagion. In this case vaccine seemed to have been sooner evolved than in the other, (the areola appearing on the 8th day,) which may account for the child escaping the small pox.

who, from previous exposure to its infection, have small pox in their constitution at the time of vaccine inoculation, and in whom the variolous eruption appears before the sixth or seventh day, little or no areola is formed, and the vesicle assumes the variolous character, yielding purulent matter, which would probably communicate small pox only. On the other hand, should the variolous eruption be postponed to the seventh or eighth day, both diseases will proceed; each, however, to a certain extent, controlling or modifying the other; the vaccine vesicle, though it will afford genuine lymph, looks delicate and subdued, nor does the surrounding areola exhibit its usual intensity, while the variolous pustules and fever show the effects of a like modifying influence; the pustules, which will afford genuine variolous infection, are smaller, less numerous, and sooner die off than in the natural disease; there is no swelling of the face, nor maturating fever.

I have in the case already mentioned, and in others, with lymph taken from a vaccine vesicle of the eighth day, on the arm of a person in whose constitution small pox was lurking, and which manifested itself on the following day, produced the genuine vaccine disease, unaccompanied with any general eruption. Dr. Willan tried numerous experiments, with the like result, which satisfactorily explains a doubt started in Dr. Woodville's Observations on Cow Pock, p. 7.—If the infection sent by Dr. W. to Dr. Jenner produced the genuine disease alone, we should not hence conclude that the 310 pustules on Anne Bumpus was not variolous.

Cow pock and small pox appear to go on better together, each appearing to interfere less with the other than either of them are known to do in regard to measles, scarlatina, &c. thereby indicating something like a kindred nature.

It appears from the experiments of Dr. Willan, that if variolous and vaccine matter be inserted about the same

period, the vaccine vesicle will arrive at its acme in the usual time, and the variolous pustule will maturate and be often attended with a pustular eruption on the skin. In such cases the fluids restrain the operation of each other on the system, and somewhat alter the form of the pustules or vesicles, without effecting any change in the quality of their contents; for virus taken from the one will communicate every species of small pox, from the mildest to the most confluent form, while fluid taken from the other produces the genuine vaccine vesicle, without any general eruption. These effects took place, without much variation, where the interval between the two inoculations did not exceed a few days; but when the variolous matter was inserted the ninth day after vaccine inoculation, its action was wholly prevented. And if variolous inoculation be performed nine or ten days before vaccine, the fluid in the vaccine vesicle will become purulent, or mixed with pus after the tenth day, and will sometimes communicate small pox, and not always of the mildest kind.

Eruptive and other febrile diseases frequently appear during vaccination, with the effect sometimes of only retarding the course of the vesicle. However, we should carefully watch the progress of the arm in all such cases. A child in the country was attacked with an inflammatory fever, requiring bleeding, blistering, and other active means. On the fifth day of vaccination the vesicle and areola were small, slow, and, as the mother said, "impoverished." I doubted the efficacy of the vaccination, and recommended the operation to be repeated, there being no distinct cicatrix on the arm. The insertion of active vaccine lymph produced a correct vesicle, which observed the usual course.

We should decline, if possible, to vaccinate a patient under any febrile disease. Should any such arise during the local action of cow pock and soon subside, there is every probability of the vaccination being complete; but

if the constitutional disease, alluded to, be prolonged, it may prevent the anti-variolous process from taking place in the constitution, and render the operation abortive. I am thoroughly persuaded that want of due attention to this point has led to many failures, and it has, I may confidently add, had some share in the mortality which we are told has occurred in the vaccine practice of our brethren on the Continent.*

Many dangerous diseases must occasionally occur during the presence of cow pock, yet it is rather singular that we should seldom hear of a person dying of any disease while under the influence of that affection. Is there not, therefore, reason to suppose that, while its action upon the system is going on, cow pock does in some degree protect the patient against the fatal effects of other diseases?

Practitioners much engaged in variolous inoculation, have observed that in some cases they found it impossible to communicate the disease, and hence conclude that some constitutions are altogether insensible to the action of small pox. The same thing has been remarked in vaccine inoculation. Whether there be any whose constitutions are from birth insensible to variolous contagion, without having undergone the cow pock, is a question impossible to answer; it is, however, very probable, that those who resist both diseases, have had during infancy the small pox, but of so mild a kind that it escaped observation. Besides, we are informed of fœtuses having gone through the small pox in utero; of which the celebrated Mauricean affords a remarkable instance.

Selection and preservation of Matter. It is of the greatest consequence to be particularly careful in the selection of virus to be used for inoculation. Our attention is chiefly to be directed to three circumstances. 1st, The appearance of the vesicle from which lymph is to be taken. 2d, The proper

* Vid. British and Foreign Medical Review, vol. vii. p. 202.

time for taking it. 3d, State of the patient; and, lastly, the best mode of preserving it. I have already described at some length, the appearance of a well marked vaccine vesicle; infection should not be taken from any vesicle which deviates in the least degree from that description. An irregularity, so slight, perhaps, as not to leave the individual liable to small pox, may produce in the next transmission a further irregularity, and thus vaccine vesicles, doubtful as to the extent of security they afford, are indefinitely propagated. As to the best time for taking infection, that must depend in some measure upon circumstances, especially the progress made by the vesicle. When one puncture has been made, and, of course, there is but one vesicle, I would be disposed to allow it to run its course uninterrupted, lest by injuring its structure, we interfere with the regular course of the disease, and prevent the completion of the anti-variolous process.

As cases, though rare, do sometimes occur, whose progress is somewhat accelerated, and oftener retarded, the rule of taking infection on the seventh or eighth day will admit of exceptions, accordingly virus has, it is stated, been obtained pure, even on the 20th day. We should always hold in view the state of the areola, for when it is far advanced, lymph should not be taken from the vesicle. Many practitioners suppose, that so long as the fluid continues limpid it is fit for use; but they all agree that it is to be preferred at an early period. Mr. Ring says he produced a perfect disease with matter which was quite opaque and purulent; and Dr. Woodville likewise, from a patient in whom the disease was so far advanced, that he was only able to collect a little moisture from the margin of the scab on the 13th day. We are not informed, however, whether these patients were afterwards exposed to the test of variolous inoculation. An acquaintance with such facts may not be improper, but they should not in-

duce us to take virus at such late periods, because we have many well authenticated cases on record, of ineffectual vesicles being excited by such means. Dr. Jenner, and many others, experienced in vaccination, assert, that lymph taken when the areola has made any considerable progress, is not to be depended upon as a protection against the small pox, "although it will produce a disease imitative of the true vaccine." It is now well known, that the famous Portsmouth cases were produced from lymph on the 11th day. That these vesicles were not genuine will appear obvious, when we are informed that their contents "*ran rapidly into a purulent state after the eighth day.*" The histories of variolous inoculation, furnish us with many instances of spurious small pox, occasioned by degenerated matter. In the Memoirs of the Medical Society of London, Mr. Kite relates, that three children were inoculated by him, all of whom had inflamed arms, on two a few pustules only, but on the third a great number appeared. Sometime afterwards, these children all took the disease in the natural way. This accident he supposed to occur from his taking the infection at too late a period (15th day after the eruption;) he, therefore, cautions us against using variolous matter, unless when fresh. Of five persons inoculated by Sir James Earle, with matter taken from a small pox pustule, far advanced, four took the disease afterwards in the natural way, one of whom died. In these cases the inflammation and suppuration were as great, if not greater than usual; eruptions also appeared about the ninth day, which, however, soon died away. In the Medical Journal, we find several cases of spurious small pox, occasioned by degenerated matter, which were attended with eruption and constitutional indisposition. The necessity of paying due attention to the particular time of taking small pox infection, might be pointed out by many similar examples. The same caution is requisite in conducting cow pock inocula-

tion, from neglect of which, either complete failure will often ensue, or a spurious disease be produced. A child being inoculated by Dr. Barry, of Cork, with virus taken on the 11th day, "the arm became inflamed, the inflammation spread, and on the seventh day, strong marks of constitutional disturbance appeared, as quick pulse, increased heat and vomiting. The inflammation terminated in a large irregular scab. A second inoculation was followed by nearly similar symptoms, but the constitution was less affected, and the scab, though by no means resembling the genuine cow pock, was smoother at the edges. The child has been since inoculated a third time, and at length shewed the true cow pock on the arm, but with very slight marks of indisposition." In the Medical Journal, vol. iv. p. 488, we have an account of the pernicious effects of vaccine virus, taken at a late period from a vesicle, after pus was formed; great ulceration of the arm was produced, attended by very considerable erysipelatous inflammation, without the susceptibility of variolous contagion being destroyed. In the same vol. p. 567, cases are recorded by Dr. Lettsome, of morbid ulceration not at all possessing the character of the true disease, occasioned by matter taken at a very advanced period. I do believe that the specific vaccine secretion ceases on the appearance of the areola, when little else than mere serum is secreted, which will disappoint us altogether, or produce a doubtful vesicle.

Infection should not be taken from any adventitious vesicle which may appear on the body, but from the *original* vesicle;* nor should we take infection from a

* Want of attention to this caution has led to serious mistakes. I have known cases where practitioners, by using infection from such pustules, supposing them to be vaccine, excited a copious eruption of small pox, instead of a solitary vaccine vesicle. I should have thought it unnecessary at present to repeat, that where small pox appears during the progress of cow pock, we may, with lymph taken from the vaccine vesicle on the *arm*,

vesicle excited in a person who has had, or is even supposed to have had, the small pox. In Dr. De Carro's book on cow pock, we have an instance of spurious matter being generated in this way, which deceived various inoculators on the Continent.

It may be proper to advert here to the following very important question. Is cow pock, in passing indefinitely through subjects, liable to a diminution or total loss of its anti-variolous property, though every care be taken to preserve its integrity? A "diminished intensity" in the vaccine lymph, which had been several years in use, having been observed by M. Bousquet, of Passy, in France, Dr. Gregory, of London, and by others, a corresponding declension in its protecting quality has been hence inferred, and the necessity urged of renewing it occasionally from the original source. This opinion of the failing efficiency in the vaccine is, as far as I know, unsupported by facts, inconsistent with the laws of morbid poisons, and opposed by a most respectable weight of evidence. Dr. Jenner, who paid unceasing attention to the subject, felt "every reason to expect that its effect will remain unaltered, and that we shall not be under the necessity of seeking fresh supplies from the cow." The Royal Jennerian and London Vaccine Institution, as well as the National Vaccine Establishment, maintains that the vaccine lymph retains its protective property throughout, and in the Report for 1839, presented to both Houses of Parliament, it is stated by the Establishment, that they have "proofs of the propriety, in the present state of our knowledge, of preferring vaccine matter, the produce of the original virus furnished by Dr. Jenner, which has now passed happily through successive generations of subjects

produce in one child a true vaccine, and with infection taken from the variolous pustules, appearing on other parts, produce in another child true small pox, but that I have just heard of a recent instance of small pox being communicated in this way, in place of cow pock.

in the course of 43 years, and which forms the principal source of our supply, to any which may have been taken recently from the cow. We admit that it is sometimes stated to us by our correspondents, that the supply which we had sent them has failed, but the same post has generally brought us intelligence that the material supplied from the very same source had succeeded elsewhere, and that it was found efficacious in Somersetshire when it was said to be inefficient in Wiltshire. We have concluded, therefore, either that it had been injured somehow in its transmission, or that the patients submitted to it were not in a fit condition to receive its influence, in consequence of some eruptive disease having pre-occupied their constitution, or of some prevailing epidemic disorder having rendered them unsusceptible of another and a new excitement for a time."

The like statement may be made in reference to the lymph now in use in the Cow Pock Institution, in Sackville Street, which has passed through thousands of subjects, without losing any of its essential properties. The lymph sent to me last year by Mr. Ceely, being but a few removes from the cow, produced vesicles not otherwise distinguishable from other vesicles at the Institution, than by their appearing to be rather slow and subdued. I am quite satisfied that the lymph will not suffer in quality by passing through subjects indefinitely, if *due attention be paid to preserve its purity in every successive transmission, according to the rules I have laid down.* But all doubts respecting the efficiency of the vaccine lymph now in use, may be removed by applying to the vaccine affection of the present day the test of Dr. Jenner's accurate description, aided by his plates, of the local and constitutional symptoms. It is important that those charged with the management of Cow Pock establishments, should be most watchful to avoid the risk of any deviation which might lead to the propagation of imperfect lymph. Where it is

thuoght expedient to resort to the cow for a supply, I would recommend the greatest caution in selecting the vesicles on the animal, and in taking the lymph at the proper period. Cows are subject to many eruptive diseases, from which we cannot, without some previous knowledge of such complaints in them, be competent to descriminate between the genuine vaccine and other eruptions. Many years ago an eminent medical practitioner in this city resorted to the cow for a supply, and instead of genuine vaccine lymph, he obtained ichor, the insertion of which in a child's arm, produced a festering sore, followed by such extensive inflammation, and constitutional disturbance and sloughing, as to leave little hopes of the child's recovery.—*Vide Jenner and Ceely.*

When infection is to be taken, a slight puncture or two should be made with a lancet, held horizontally, in the margin of the vesicle, the virus will soon exude, and may be collected for use; if it is not freely discharged, a very gentle pressure may be made, or another puncture; but every sort of roughness must be carefully avoided; severe inflammation and troublesome sores being thereby frequently occasioned. Having obtained a sufficient quantity from the vesicle, we may apply cold water to it, in order to prevent the further effusion of the virus.

Parents, it may here be observed, often object to our taking infection from their children, alleging that unnecessary pain and irritation are thereby excited in the part; and they are confirmed in this prejudice by the occurrence of the inflamed areola a day or two after the infection has been taken—thus erroneously attributing a necessary symtom of the cow pock to the abstraction of lymph from the vesicle. There is also an apprehension lest the anti-variolous process in the constitution should be weakened by it. I have, it is true, witnessed the bad effects of too freely puncturing the vesicle, and rudely pressing out its contents. Alarming erysipelatous redness and inflamma-

tion of the arm and forearm attended with irritative fever, are the occasional consequences of such rude treatment. Nor would I venture to say how far exhausting a vesicle of its contents, might interfere in lessening the protective influence of cow pock,* but I have never experienced any present inconvenience, or future ill consequences from *skilfully puncturing the vesicle with a clean lancet, and allowing a moderate portion of lymph to flow out spontaneously, and without pressure.* Nor should I apprehend any weakening of the vaccine protection from it. However, an anxiety in the present state of our knowledge regarding cow pock, to avoid every possible source of failure, may very fairly suggest the propriety of exciting in every case three vesicles, and allowing one to proceed intact.

In taking infection, we should avoid *mixing* the lymph of different subjects, lest inefficient vesicles be in that way generated, as I have known to happen.

Different authors recommend different modes of preserving vaccine virus. Some attention is required here ; for if improperly preserved, it will fail altogether, or induce an imperfect disease. Many desire it to be taken on thread, which, being applied to the punctured vesicle, so as to absorb as much as possible of the lymph, may be suffered to dry, and again applied: this operation to be repeated till the thread is perfectly saturated, which may be preserved in a phial, or a quill made air proof. Cotton thread is better than the common, as it absorbs more. In the summer of 1800, Mr. Ring sent some cow pock lymph, on cotton thread, rolled up in paper, and covered with a varnish, which excluded the air, to Dr. Crawford, of Baltimore, which succeeded. Others recommend us to take it upon the point of a quill, or several slender portions of one may be infected and enclosed in the barrel of another, or in a bottle. Vaccine lymph, which Dr. Jenner had

* Vid. Dr. Forsayeth's Case in the Appendix.

collected on a quill, and suspended in a small phial, was used with success, after three months, and from it the first patient ever vaccinated in London, received the disease. It was used by Mr. Cline. This mode has been found very effectual, and is therefore much used and recommended. Small pieces of ivory, shaped like the tooth of a comb, termed vaccinators, seem well adapted to take and preserve the virus, they do not contract rust, therefore, lymph may be kept on them for a long time, when enclosed in a bottle. In October, 1803, Dr. De Carro sent vaccine lymph on an ivory lancet, enclosed in a wooden case, from Vienna to Dr. Waterhouse of Cambridge, in America, where it was used on the 27th of November, 1804, and produced genuine vesicles. I do not know any better or more convenient method of preserving it, than between two squares of glass, which may be charged by applying them several times to a punctured vesicle, and enclosed in a moistened bladder, or gold-beater's leaf; or, as recommended by Dr. Cappe of York, to unite the glasses, and brush their edges with a solution of sealing wax in spirit of wine; the former, however, as practised at the Cow Pock Institution, in Sackville Street, appears the best; the bladder, when moistened, will so adhere to the glass, that the air will be perfectly excluded; lymph packed up in this way was sent by Mr. Ring to Dr. Waterhouse of Cambridge, who used it with success on the seventieth day after it was taken from the vesicle in London. Mr. Shoolbred, Superintendent General of Vaccine Inoculation, in Bengal, has found this mode to succeed best, glass being a bad conductor of heat, and therefore more likely to defend the infection from changes of temperature, and not being liable to chymical changes, seems well adapted to the purpose. Dr. De Carro, however, was never able to excite a vesicle with infection received from London in this way; he therefore prefers thread, by which the virus, originating with him, was conveyed to India, and excited the disease

after other modes of transmitting it had failed. We are informed by the same gentleman, that matter succeeded which he had received upon thread from England, in a letter dated March 20th, 1799, and used the 23rd of September following. Dr. Pearson sent matter to Paris, included in a bottle full of Hydrogen gas, which proved active.

Tissot preserved small pox matter upon thread, for 26 months, which succeeded; and Kirkpatrick preserved some in the same way, for five years and eleven months, which also was found to be active. Such practice, however, is unnecessary and improper. We should recollect that, by long keeping, the vaccine virus sometimes undergoes a change which renders it incapable of producing a true vesicle. Stale matter produced spurious vesicles, which were mistaken for true cow pock, as Mr. Ring states, at Geneva and Vienna. I saw a spurious vesicle, attended with much inflammation, excited by lymph which had been preserved on a lancet, for some days.

Infection, intended to be kept for any great length of time, should always be allowed to dry in the shade, without heat, before it be packed up, and then kept in a dry, cool place.

The activity of cow-pock matter seems to be impaired by very high degrees of temperature. Failures, in warm climates, seem frequently attributable to this cause; and in the West Indies, particularly, the disease has, in consequence, been several times lost: hence, practitioners there consider it as an established law, "that, in a temperature of 90 degrees, the vaccine matter loses its activity, and becomes absolutely inert."

An intelligent lady, who was long resident in India, told me that great difficulty was experienced in communicating the disease with fluid vaccine lymph direct from one child to another; and we are informed, by Mr. Brown, in his paper on the renewal of the vaccine infection, inserted in the Calcutta medical Journal for April, 1827, that, at

Silhet, in India, the vaccine lymph, in three or four months, changes to a thin, purulent-looking fluid, resembling unhealthy pus, which, by inoculation excites the pustular variety of irregular vaccine vesicle, described by Dr. Bateman, rendering it necessary to discontinue vaccination from such a source.

Dr. Jenner observes, that matter dried by the fire, had a greater tendency to produce ulceration, than to excite a true vaccine vesicle; and Dr. Thornton says, it proves quite inert; whereas, when dried in the sun, he found it active: however, the shade, as observed, is preferable. Cow pock virus should not be kept on a lancet longer than ten or twelve hours. Platina being incapable of oxydation, and not liable to contract rust; lancets may be made of it, as used and recommended by Dr. Pearson.

The Vaccine Society in Paris preserves infection in capillary tubes: one extremity of the tube to be applied to the vaccine vesicle, previously punctured in several places, so that the lymph may rise in the tube; and, when it is filled, the extremities are to be secured with sealing wax.

Mr. Bryce prefers the cow pock crust to all other modes of preserving matter,—with a solution of which he has been in the practice of inoculating. Several years ago, I used some which was obtained from him, and produced a regular disease. In 1805, I repeated the experiment, with a crust from one of Dr. Clarke's patients, with the same effect; and upon many cases of emergency since, I have used crust with success. I therefore, believe Mr. Bryce's proposal to be a good one, particularly in situations where recent matter cannot be procured. I consider it as cow pock matter concentrated; or, as Mr. Bryce himself terms it, "the real extractive matter of the most pure and active virus, secreted into the cells of the vesicle;" and, as it is not liable to decay, or decomposition, at least, for a great length of time, it will justly claim the

preference, should the experience of others coincide with ours. Mr. Hugo, of Crediton, has long used the vaccine crust, and Dr. Cox, of Philadelphia, succeeded in producing a perfect cow pock vesicle, with a crust which had been preserved nine months and three weeks. In Sweden, the crusts of the small pox have been frequently preserved for the purpose of inoculation.

Dr. Shoolbred produced genuine vesicles, at Calcutta, with crusts four months old. Surgeon William Scott, of the East India Company's service, an experienced vaccinator, considers the use of the crust a most important improvement in vaccination, especially in hot climates, where the preservation of the virus is effected with great difficulty; and Dr. Wood, already quoted, says, that vaccine crusts are found to be much more certain in effect than lymph, when it has to be conveyed to a distance. Under the most favourable circumstances, there is more difficulty, he adds, experienced in communicating cow pock in India, than in European climates. They are by no means so certain in their effects as recent infection; but when they do take effect, a genuine vesicle is produced. Since we are cautioned against taking infection for inoculation from a vesicle in an advanced stage, it might naturally be expected, that using the crust at a still later stage, would equally expose us to the risk of producing a spurious disease; but, from the explanation given by Mr. Brice, and from my own repeated experience, I am quite satisfied that there is not the smallest ground for any such apprehension. I think, great care is requisite in collecting the crusts—not to take any but those which are *first formed, and from perfectly genuine vesicles, which have been allowed to run their course without being punctured,* or otherwise disturbed, in their progress. If we take infection from the vesicles, we render the crusts less efficacious, or perhaps altogether effete; or, if we use the secondary crust, which sometimes forms where the first falls off early, we will be disap-

pointed. I lately produced most perfect vesicles, from a crust I had preserved more than twelve months.

Mode of Inoculation.—Fluid matter, being much less apt to disappoint us than dried, is to be preferred; therefore, we should, if possible, transfer it immediately from one patient to another. Having made two or three *slight scratches, so as merely to draw blood,* we take the lymph from the vesicle, on the point of a lancet, and *wipe it carefully in the little wounds.* The operation may be performed near the insertion of the deltoid muscle; and, to ensure its effects, be repeated in another part of the *same* arm, at such a distance from the first, as that the two vesicles may not run into each other. Deep incisions being often followed by inflammation, and abscesses; they should therefore be made as slight as possible *upon* the skin, rather than *through* it. (Many years ago, when engaged in small pox inoculation, I thought that very slight and superficial incisions produced a milder disease.) It will render the operation more certain, if, by keeping the arm quiet and uncovered, so as to allow any blood that oozes out after the application of the infection to dry on the part.—A circumscribed blush immediately appearing around the point of insertion, affords an almost certain presage of a successful operation. Very young infants should be inoculated in one place only. In several grown up people whom I have inoculated, there was the greatest difficulty in preserving the vesicle entire; and in some of them, repeated inoculations were followed by a phlegmonous appearance, quite different from the true vaccine vesicle; whether this circumstance was owing to the state of the skin in adults, to their mode of living, or to their having previously had the small pox, I cannot venture to assert. I have sometimes observed the same thing in children. I have inoculatied some on whom premature vesicles were produced, the areolæ of which were fully formed on the sixth day; the scabs however remained

for the usual time. I am, from the histories of the cases, disposed to believe, that the patients, above alluded to, had had the small pox, or cow pock.

If the virus is contained on the point of a quill, or a vaccinator, or a needle, scratches such as I have mentioned, must be inflicted with a clean lancet, and the infected point of the instrument applied as above.

Lymph contained between plates of glass, should be mixed carefully with the smallest particle of cold water, taken upon the point of a lancet, so as to be made into a perfect paste, and rubbed into the part with the precautions already given.

Dr. Woodville remarks, that vaccine lymph in a dried state, failing oftener than small pox to communicate the disease, does not depend upon its being of a more volatile nature, but upon its greater hardness and difficulty of solution; he therefore very properly recommends us to be particular in mixing it perfectly with the smallest particle of water before it is used. I have succeeded very well, by applying the infected part of the glass to the part, and rubbing it gently thereon, so as to dissolve the virus in the serum which issues from the cuts, and completely lodge it therein. I have also succeeded by taking the virus off the glass in a dry state, and dissolving it perfectly in the serum upon the part.

In using the crust, a small piece, sufficient only for the occasion, being allowed to remain on glass with a drop of water, till it is softened, is then to be rubbed with the shoulder of a lancet, into a most *impalpable* paste, adding more water, if necessary. A portion of this whitish fluid being taken on the point of a lancet, is to be applied in the same manner, as when the ordinary lymph is used. To ensure success in this mode of vaccinating, three things require attention. 1st—Selecting the first formed crust, and from a genuine vesicle, which has been allowed to run its course undisturbed, by taking infection or otherwise.

2nd. The solution of the crust to be carefully made; and, 3rd, to be well rubbed into the little scratches previously made with the lancet.

Thread saturated with infection is recommended to be used by placing a small portion of it on an incision about the eighth part of an inch, and retaining it there by means of a mild adhesive plaster. I have no experience in this mode, but I should be apprehensive that the application of such a substance might, in some degree, interrupt the regular formation of the vesicle, or, if left too long on the part, we may rupture the vesicle in removing the plaister. Dr. Barry found sore arms more frequent after inoculation with a thread, than in the usual way, which he attributes to the largeness of the incision made on such occasions: may not the thread in the wound acting as a foreign substance, contribute to this effect?

When we are to inoculate several patients, we should dip the lancet in cold water after each operation. Lancets should be kept perfectly free from rust, as sore arms have been the consequence of neglecting this precaution.

Much stress is laid by some of the Continental vaccinators on the number of vesicles excited. Some are content with three or four punctures on each arm; others think it necessary to excite twenty, or even thirty vesicles, conceiving that the production of some manifest constitutional effect is necessary to ensure success to the operation, and undoubtedly he who inflicts such over-puncturing upon a child, will be pretty certain of having constitutional disturbance, but will there be the same certainty of effecting the wished-for protection in the constitution; and is there no danger of exciting, by such practice, so much local inflammation and symptomatic fever as may interfere with the healthy vaccine process, or even endanger the safety of the patient? I have seen such severe local inflammation and irritative fever produced, by four vesicles on each arm, as will for ever deter me from deviating from my usual

practice of trusting to one or two vesicles, which I think sufficient to afford all the protection to be expected from vaccination. *Dr. Jenner was satisfied with a single vesicle.*

If, in consequence of the apparent failure of the first inoculation, we are to repeat the operation, it should be performed on the opposite arm, for, as we have already stated, it not unfrequently happens, that the matter first introduced, lies dormant for several days, and appears to be roused into action, as it were, by the activity of that last inserted; and if the vesicles from the two inoculations are very near each other, the regular appearance of the disease may be confused, and a sore arm produced.

On the part of the person inoculated, some attention is necessary. He should live abstemiously, keep the arm at rest, and carefully protect it from pressure, hurt, or any cause of irritation, during the whole course of the disease.

Dr. Waterhouse justly observes, that cow pock is too lightly thought of by physicians, who do not therefore enjoin the observance of any precaution in these particulars. He mentions that a patient of his was affected with a violent head ache and stricture across the stomach, attended with high fever and slight delirium, brought on by walking six miles in a hot day during the progress of cow pock.

The vesicles, on the arm of an officer I vaccinated, were proceeding regularly till the seventh day, when, he having rode severely at a hunt, the arm inflamed from the shoulder to the fingers ends, high fever supervened, and for some days I felt very uncomfortable about the case. Another military gentleman, by indulging freely at the mess on the eighth day, was similarly attacked. Active depletion was found necessary in both cases. In one an abscess formed in the axilla.

Where inoculation appeared to fail from delicacy and languid circulation in the subject, I have had reason to believe that the administration of wine and a more gene-

rous diet to the individual, or to the nurse, in case of a suckling, has rendered a subsequent insertion of lymph successful; and Mr. Finch, of St. Helens, informs us, that whenever the infection failed in those of a weak habit, he found it very useful to order a more generous diet, and to direct the mothers of such as were at the breast, to observe the same rule, after which it more readily took effect. In such cases, friction, by stimulating the absorbents, has been found serviceable; and Dr. Trotter recommends us to bathe the arm in warm water, and wipe it afterwards with a rough towel.

Patients under the influence of sulphur, very frequently resist the infection of cow pock. Of 88 inoculated with it in Reigate Poor House, there were six who had been lately anointed for the itch, in none of whom did the infection take place. When it does take effect in such as are impregnated with sulpher, the progress, it is said, of the vesicle has been checked, so that, after having once appeared, it continued stationary, or nearly so, for several days.

I have inoculated patients, some under the influence of mercury, for the cure of lues, others under that of sulphur, to remove itch, and I generally found the latter more disposed to resist the vaccine action. Thirty men who had been but lately cured of an inveterate itch, by sulphur, were inoculated, with cow pock by Dr. Jenner, but not one took the complaint, owing, as the Doctor concluded, to their constitutions being charged with sulphur. On repeating the operation in a few weeks, they all took the cow pock.

Before I proceed to the medical treatment, it may not be amiss to lay before the reader the following statement respecting the mortality said to occur during the progress of cow pock.

In these countries, no account, so far as I can learn, is kept of the proportional deaths occurring during the pro-

gress of vaccination; but we have the result of calculations made on the Continent. Thus Dr. Heim states that in Wirtemberg, of 208,322 children vaccinated during five years, from July 31, 1831, 70 died during the progress of vaccination. In Baden, of 98,198 children, vaccinated from 1817 to 1820, inclusive, 79 died; so that of 306,520 vaccinated, 149 died, or 1 in 2,057. A portion of this mortality, Dr. Heim attributes, and with justice, to accidental complications occurring during the progress of cow pock. I have not the means of enabling me to speak with precision on this point, but feel assured that no such proportional mortality prevails with us; on the contrary, I am sure, that the average rate of mortality is less during the progress of the vaccine vesicle, than during a like period at any other time; and this may be accounted for by our *declining to vaccinate where there is any appearance of indisposition at the time*—a rule which I fear is not always attended to.

Medical treatment.—The constitutional symptoms, when such do occur, are commonly slight and transient, therefore seldom require any remedy. The only internal medicine which I have ever seen necessary, is an aperient, and this but seldom; where the patient is hot and restless, particularly if he be of a full habit, and strong, it will be found useful to exhibit an opening remedy about the 8th, or from that to the 11th day. Should other symptoms supervene, they are to be treated as if proceeding from any other cause. No preparation is required, nor are cathartics at all indicated either before or after vaccination: indeed such practice even after small pox, is thought by many experienced practitioners to be prejudicial.

It sometimes happens, that considerable inflammation of the arm is brought on by pressure, &c. In such cases, the frequent application of equal parts of vinegar and water; Aq. Lithargyri acet. com., or a solution of Sacc. Satur. will be found serviceable, it should be used quite

cold. When the vesicle is broken before the 6th or 7th day, its contents effused, and there continues an oozing from the part, the areola probably will not be formed, nor will the antivariolous process take place in the system: such ineffectual inoculations are frequently followed, particularly in scrofulous children, and those subject to eruptions on the skin, by troublesome sores; we cannot therefore too often repeat, that the strictest attention is necessary to obviate these unpleasant symptoms, by guarding the vesicle from all injury, by pressure, scratching, or otherwise. When sores do occur, an ointment composed of *Ung. Hydr. Nit.* part 1, and *Ung. Simp.* part 2, seems most useful in removing them, or in the first instance a drop or two of the Liquor. Plumb. acet. to the oozing vesicle will stop the discharge, and prevent ulceration.

Sometimes, however, although the vesicle be torn, and part of its contents discharged at an early period, yet the effusion ceases after a short time, and the vesicle follows its regular course; should this not take place, cold water will frequently succeed in checking the discharge; if this proves ineffectual, more powerful astringents, as diluted vitr. acid, or the Liquor. Plumb. acet. must be had recourse to, either of which may be applied to the broken vesicle, with the point of a probe; and a few minutes after, cold water may be used. We should prevent the linen from sticking in the vesicle, as it would excite troublesome inflammation. When the ulceration becomes deep or extensive, a poultice of bread and milk, or a saturnine poultice is recommended. I never use either. If the sores become obstinate, resisting the means already mentioned, particularly if they have an ichorous discharge excoriating the neighbouring parts, escharotic applications, such as the red oxyd of mercury, mixed with any simple ointment, may be used.

About the 11th or 12th day, there sometimes comes on excessive inflammation in the arm. In the Med. and Phys. Journal for February, August, and November, 1801, we

have four cases of extensive erysipelatous inflammation succeeding vaccination. In two it proved fatal. In such cases, we are desired by Dr. Jenner to apply to the vesicles for two or three minutes, pledgets of lint previously saturated in Aqua Lythargyir Acetat. and then to cover the surrounding efflorescence with a piece of linen dipped in the Aq. Lythargyri comp. the former may be repeated twice or three times a day, the latter as often as agreeable to the patient. Strong mercurial ointment has been used in such cases with advantage. Cold water is esteemed by many the best local application.

Should the axillary glands inflame considerably, we may use cloths wetted with the Aq. Lythargyri comp. and kept constantly applied. If they show a disposition to suppurate, this may be promoted by the usual means.

No application should be used warm.

The above remedies will seldom be required, if proper attention be paid to the arm; the vesicle will generally be formed into a scab, which, falling off, leaves the part underneath entire. When the crust is prematurely rubbed off, a drop or two of Aq. Lythargyri acetat applied to the part will prevent a running sore from taking place.

Re-vaccination.—Although it is agreed on all hands, that cow pock affords a protection against small pox, yet medical men are not unanimous as to the nature and extent of the protection; some asserting its *permanency*, others limiting its protective quality within certain periods, as seven years, or the age of puberty. Internal diseases, or those changes which are supposed to take place in the human body, at the climacterical years, may, it has been suggested, weaken, or altogether remove from the constitution the vaccine defence, and leave it liable to future small pox infection. To remedy this alleged defect, the practice of *re-vaccination* has been recommended, and the apparent success which has attended the re-vaccinations performed, on a large scale, in different parts of the Conti-

nent, would seem to prove the necessity of the precaution; but it may be fairly asked, were the subjects of those experiments correctly vaccinated previously? and if so, is the appearance of vaccine vesicles on their arms to be considered as sufficient proof of a returning susceptibility in the constitution, to variolous infection? I think not—the opinion is not supported by any analogy in nature, and Dr. Jenner ascertained that vaccine, though it protects the constitution from small pox, leaves it still, to a certain degree, susceptible of its own action. It is well known that vaccinated patients after resisting the strongest exposure to small pox, have, on revaccination exhibited perfect vaccine vesicles. If the prophylactic influence of cow pock gradually declines, and finally wears out, as has been asserted, we should find that the number of cases of small pox after vaccination, would increase with the distance of time from the period of vaccination, which, however, is not the opinion of those well qualified to judge. Dr. Mitchell, of Newtown-mountkennedy, vid Appendix, has seen so many children take small pox one, two, or three years after vaccination, that he cannot believe the first 7 or 10 years enjoy any peculiar immunity; and the majority of information I have received upon the subject, as also my own experience, would lead to the same conclusion. One case of small pox after vaccination in an adult makes a greater noise than half a dozen occurring in children. In the report of re-vaccinations in the Prussian army for 1838, it is stated, that several cases of small pox occurred after successful re-vaccination. Such cases have been reported to me on respectable authority.

The re-vaccinists maintain that if, in a person who has been previously vaccinated, a re-insertion of vaccine lymph produces a well-marked vesicle, a proof is thereby obtained that the anti-variolous influence has worn out of the system, and that the individual has become susceptible of small pox. The correctness of this position, however, I

peremptorily deny. By a parity of reasoning we should conclude that vaccination succeeding in a person who has before had small pox, is a proof of liability to a second attack of that disease. Dr. Heim, of Wirtemberg, states, that of 297 persons marked with the small pox, who were inoculated with cow pock, 95 had well marked vaccine vesicles; in 76 the pock was modified; and in 126 the operation entirely failed. The proportion of 100 cases of each description is as follows :—

Vaccinated after small pox	with success...	32
Do.	do. modified...	26
Do.	do. without effect....	42
		100
Re-vaccinated with	success.....	34
Do.	modified	25
Do.	without effect....	41
		100

Vid. Report of the Vaccine Section.

We should then conclude, upon the principles laid down by Dr. Heim and other re-vaccinists respecting vaccinated subjects, that of every 100 individuals who have had small pox, so as to be marked by it, 58 shall, after a lapse of time, become liable to a second attack of that disease. Universal experience, however, is opposed to any such conclusion.

We are informed by Mr. Ring, in his work on cow pock, of several persons who, having previously had small pox, were vaccinated, and exhibited standard vesicles, lymph from which produced in others the genuine disease. I should not approve, however, of using infection after passing through subjects who had previously been vaccinated.

The *durability* of the vaccine protection has been well tried in England since its introduction in 1800, by the constant and unlimited exposure of the vaccinated to every

degree of variolous infection, and I cannot express the result better than in the words of the " Report of the Vaccine Section :"—

" If vaccination lost its saving energy, in the manner that has been imagined, from the results of the re-vaccinations on the Continent, we should have had corresponding proofs in our own country. We have seen small pox spreading very generally in towns and districts where vaccination has been performed more or less extensively for nearly forty years; and although re-vaccination has been very partially employed, such persons have perfectly resisted small pox, which certainly could not have been the case, had the prophylactic powers of vaccination decayed, as has been asserted." Again—" Upon the whole we are of opinion that re-vaccination can only be required where doubts are entertained of the correctness of the first vaccination. This is also the decision of most of our correspondents, who mention the subject."

Dr. Sacco, of Milan, inoculated with *small pox* a few years ago, a considerable number of persons who had been vaccinated from six to twenty-four years, and they all resisted the disease.

Dr. Jenner did not leave this part of his great work unfinished; he left behind him sufficient proof that cow pock protects the human constitution from the infection of small pox, *not merely for a few years, but for life.* He inoculated with variolous infection several who had cow pock from twenty to sixty years before, without being able, *in a single instance*, to produce small pox.—*Vide his Work on Variolæ Vaccinæ, pages* 9, 11—14, 20, 123, 124, 127.

Any want of durabity in the vaccine protection must, by this time, have been exposed in Gloucestershire, the immediate theatre of his early operations, but what says the report just quoted on this point—" It is our duty to specify that the information derived from the ablest medical gentlemen in Gloucestershire, and from inquiries instituted

respecting the state of patients vaccinated both by Dr. Jenner and his immediate connexions, give no support to the notion, of the vaccine protection wearing out at puberty. Had it been well founded, many epidemical attacks of small pox which have prevailed in the district, must have confirmed it. In the town of Cheltenham, there has been considerable prevalence of small pox during the last few months. We have had several cases of small pox after small pox there, one of which was fatal. There have been cases of modified small pox after vaccination, but these failures have certainly not happened uniformly at the period at which we are taught to expect them."

But why need I cross the water in search of proofs of the permanency of the protection afforded by vaccination? I am willing to send the case to a jury of medical men, on evidence within our reach. I think I may fairly estimate the numbers vaccinated in this city and its neighbourhood since 1800, at 300,000. Now, if cow pock failed to afford permanent security against small pox, would not the public and the profession have detected the imperfection in forty years experience? whereas the profession adopt the practice universally in their own families. The late Doctor Clarke and Doctor Evory, men of observation and great experience, and who were well known to be extensively engaged in the practice for more than thirty years, declared to the last their unabated confidence in the *durability* of the vaccine protection.

Dr. Clayton of Athy, (vid. Appendix,) inoculated with small pox persons at all periods after vaccination up to 25 years, without perceiving any difference in their susceptibility.

Dr. Faussett, of Ballina, (vid. Appendix,) tried the like experiment, and with similar results.

"During a residence of 20 years," says Dr. Hall, an experienced vaccinator, "in Boyle, it is impossible, the small pox being so often prevalent there, but I must have

witnessed glaring instances of the failing security of vaccination, if it had been constantly growing weaker, according to the opinion of some."—(vid. Appendix.)

Dr. M'Dermott, of Kells, 38 years practising vaccination, (vid. Appendix,) has inoculated with small pox persons several years after vaccination, without effect; and with some of the Meath militia, whom he vaccinated so far back as 1800, he has had opportunities of testing the permanency of the protection afforded by cow pock.

During a period, little short of forty years, that I have been extensively engaged in the practice, having vaccinated many thousands at the Cow Pock Institution, and in private practice, and made it a rule to investigate cases of failure, I can with strict truth state, that I never witnessed a single case of death from small pox after vaccination, nor more, certainly, than ten, if so many, in which *well marked* small pox, in four or five of whom the disease was severe, and in the remainder very mild, occurred in persons who were previously vaccinated by myself. Having attended closely to the practice of the Institution since it was opened in 1804, and witnessed the vaccination of upwards of 160,000, with the success I have mentioned, I think I am justified in asserting that *perfect* vaccination is *permanent* in its influence, and, therefore, that periodical re-vaccination is uncalled for.

In further corroboration of my opinion, I shall subjoin extracts from a late report of the Directors of the Cow Pock Institution, and from Mr. Kirby's very important and interesting letter upon the subject.

"It was asserted at an early period, that cow pock could only protect the constitution from small-pox for about three years; numerous experiments, however, tried in different places, satisfactorily refuted the allegation. Afterwards the period of security was extended to five or six years. To ascertain how far this opinion was correct, the Directors, in 1810, submitted about twenty children

who had been vaccinated five and six years before, to *variolous* inoculation, but without producing small pox; and about the same time, nineteen children, who had been vaccinated eight and nine years before, were inoculated with small pox at the Foundling Hospital, but with no other effect than slight local inflammation. Many similar experiments were instituted at that time by private practitioners, and with the like results. More recently still, the efficacy of cow pock, as a permanent preventive of small pox, has been called in question, but the period of security extended to ten and fifteen years, and re-vaccination at certain stated periods recommended; but the experience of this Institution does not prove the necessity of such alleged precautionary measures. Many thousands of the patients who were vaccinated from 30 to 35 years ago at this Institution, at Mr. Creighton's Dispensary for Vaccine Inoculation, at the various Hospitals and Dispensaries, and by private practitioners, being still in Dublin and its neighbourhood, it is reasonable to suppose that if Cow Pock did not for the most part afford permanent security, the records of the Istitutions and Practitioners above alluded to, would exhibit numerous cases of small pox occurring in those who had been vaccinated; whereas the well authenticated cases of failure of vaccination are so very few, as scarcely to affect the general proposition, that *perfect vaccination is permanent in its influence.*"—*Vid. Report of Cow Pock Institution for* 1839.

"I am," says Mr. Kirby, in his letter to me, "a firm believer in the full protective power of vaccination, the virus being pure, taken at a proper period, and inserted under favourable circumstances,—the course of the disease being watched, and duly attended to by persons whose knowledge, from ocular experience of the specific pustule, can alone make them arbiters adequate to judge of its character, and to pronounce as to the defensive security it affords.

" This being a bold statement, I shall place before the public the grounds on which I rest the conviction I have so pointedly expressed. They are here set forth :—

" In the first place—I was initiated in vaccination when it was introduced into this country, under the superintendence of Professor Creighton, in 1800. I attended his Jennerian lectures, and I assisted in the performance of the minor duties of his Vaccine Institution, in which some thousand cases were annually under my observation.

" In the second place—As Junior Surgeon for several years to the Dublin General Dispensary, the only one then existing in this large metropolis, the duty of vaccinator to an extensive population devolved principally on me.

" In the third place—My situation as chief medical officer, for thirteen years, to St. Peter and St. Bridget's Hospital and Dispensary—my connexion with the Coombe Hospital, where thirty thousand persons were annually relieved—and my position for several years as one of the Surgeons of Jervis Street Infirmary, with which a greatly frequented Dispensary is connected, have placed me in close and constant intercourse with a large mass of the population of this city.

" In the fourth place—For a period of more than thirty years the poor have had free access to me at my house, where I have annually written for them an average number of six thousand prescriptions.

" In the fifth place—If to these opportunities of intercourse with the indigent sick be added those afforded by private practice, both general and extensive (and the amount on this head I could state even to an individual,) I am sure I may affirm, with a close approach to correctness, that I have professionally communicated with about 300,000 persons since the introduction of vaccination into Ireland.

" From such a wide range of opportunity it is reasonable to conclude that small pox, if at any time largely epidemic,

must have constituted a prominent item in the vast catalogue of diseases which I have seen since I entered into practice. Yet it is a fact, that the instances in which this malady prevailed, were so exceedingly few, that they may be estimated as almost nothing in the vast ocean of destitution, intemperance, poverty, and sickness, which has been spread before my observation.

"The inference also seems equally reasonable, that had such cases as are admitted to have occurred, offered themselves in persons who previously had been CAREFULLY vaccinated, they could not have failed to attract attention and to awaken a distrust in the sufficiency of vaccine power, on the human constitution; but as the subjects of the disease were either never vaccinated, or were not subjected to a proper vigilance after vaccination, my confidence has at all times remained, as it now remains, unshaken as to the defensive virtue of vaccine matter, not only throughout the brief season of a few years, but during the full period of human existence. Surely if its influence was not thus prophylactic, I must have seen variola amongst adults of all ages, in whom, according to the new assumption, the prohibitory agency of vaccination may be presumed to be worn out; but on the page of my experience there is no such record written."

Before quitting this part of my subject, I would beg to suggest that practitioners would closely review their early vaccinations, and wherever there is any doubt as to the correctness of the previous vaccination, to repeat the operation; but where no such doubt exists, I do not think re-vaccination necessary, and, I apprehend, the practice of systematic re-vaccination would prove injurious. Practitioners and parents would thereby be led to pay less attention to the first vaccination, under the impression that any irregularity would be rectified by the intended re-vaccination. This dependance upon a future operation would lead to imperfect vaccination, and consequent

failures. Then, again, should we fail to produce a proper vesicle, as will often happen in such cases, we leave the person in a state of doubt and constant alarm. But I would strongly recommend the adoption of Brice's test, which, when properly conducted, will afford every protection that we can expect from vaccination.

Comparison between the local affection of inoculated Cow Pock, and inoculated Small Pox. Their appearances differ materially in two particulars. 1st, in the *form*—and, 2d, in the *contents*. In the cow pock the vesicle is circular or oval, according to the mode in which the operation has been performed, with a regular and well-defined margin, the edges elevated, and the centre depressed, which is occupied by a dark crust, at first small, but gradually increasing, as already described. The pustule produced from small pox inoculation is not circular, nor its edges well defined, but indented and ragged; there is rather the appearance of several pustules, at first distinct, but which soon run together, so as to give the whole a very irregular serrated appearance. The small pox pustule is not depressed, but rather prominent and acuminated, nor does any crust appear until the disease is far advanced. About the fifth day, the base of the cow pock vesicle is not, in general, surrounded by any inflammation as in small pox, but often assumes a white appearance. The vaccine vesicle, particularly when viewed through a glass, exhibits a cellular structure; the small pox has no such appearance. The former maintains the same character throughout its progress, viz. its edges elevated, regular, and well defined; whereas the latter becomes more and more irregular, owing to clusters of pustules running into it. The small pox often terminates in a sore of great extent, and troublesome to heal, and there remains an irregular ill defined cicatrix. The cow pock vesicle, on the contrary, is gradually converted into a crust, which falling off, leaves a circumscribed pit, corresponding with the size and shape

of the vesicle, pitted like the bottom of a thimble; and, unless rudely treated, no sore ensues. The fluid secreted in a vaccine vesicle is quite limpid, and perfectly transparent; nor is it changed into a purulent matter, but is gradually converted into a hard crust. The small pox pustule, when fully formed, contains matter of the consistence of pus. The crust formed in the former, is smooth, hard, and semi-transparent, of a dark brown or mahogany colour, not improperly compared to the transverse section of a tamarind stone, its margin elevated, retaining pretty nearly the regularity of shape and appearance of the vesicle itself. The small pox crust is rough, scaly, friable, and quite opaque, of a light brown colour, its edges irregular, and centre rather elevated. The efflorescence surrounding the cow pock vesicle, is regular, and its margin well defined, and there is commonly more hardness observable in the skin. In the small pox, it has more the appearance of a large irregular, ragged blotch, bearing a more angry aspect, and copiously studded with minute confluent pustules. A pustular appearance is not observed in the cow pock areola.

Pustular Eruptions subsequent to Cow Pock. In cases where the arm, through neglect, continues in a state of ulceration for any length of time, there not unfrequently appears an eruption of pustules, which may be mistaken by inexperienced practitioners for small pox, whereas they occur from the absorption of matter into the system, as may happen from any sore, if neglected. Were such a case to happen to one of our anti-vaccinists, it would be brought forward as a striking instance of the inefficacy of cow pock. I saw one case of this kind, and I must confess it startled me a good deal, particularly when the child's mother informed me, that it had been some days before exposed to the infection of small pox; a little time, however cleared up my doubts. In some part of Mr. Ring's work, a case is mentioned in which these pustules terminated in sores.

Practitioners will every now and then be called upon to decide, in cases of eruptions subsequent to vaccination; and here great accuracy and attention will be required, to distinguish between small pox and other pustular diseases. A prolific source of error may be afforded, by confounding chicken pox with small pox. A patient who has gone regularly through the cow pock, may be seized with an eruption of pustules, which through ignorance or design, may be termed the small pox, when, in fact, the disease was varicella. The late Dr. Heberden, in his very excellent dissertation upon chicken pox, in the first volume of the Med. Transactions, says, he has not seen this disease confluent, or with a large crop of pustules; for that the greatest number he ever saw, was about 20 on the face, and 200 over the rest of the body; that the constitutional symptoms are very mild, and that the vesicles are filled with a colourless or serous fluid, and the rapid progress to a state of maturity, or the rupture of them, may in general serve to distinguish the two diseases. However, we are well assured that the vesicles sometimes contain a puriform fluid, that they are frequently more numerous and confluent than already mentioned; and that the constitutional symptoms are at times more severe than Dr. Heberden seems to think. He, however, allows a similitude to exist between the two diseases, and even acknowledges that they may be mistaken for each other, which he says happened to Morton and others; and hence he supposes that children have been inoculated with chicken pox instead of small pox. Vogel and other writers speak of varicella as a spurious kind of small pox. Dr. Cullen thinks that medical men have been often deceived by the chicken pox, from its assuming the appearance of small pox, and hence he says, it was imagined that the same person had the small pox twice. Heberden allows that cicatrices are sometimes left after varicella, which, however, is denied by Dr. Cullen.

Cow Pock has often been brought into disrepute un-

deservedly, by inexperienced or inattentive observers mistaking varicella for variola. Since the publication of the first edition of this Address, several cases have occurred in this city and elsewhere, of pustular eruptions after vaccination, which, on minute examination, proved to be varicella, though, from the severity of the fever in some, and the extent of the eruption, they were at first held to be small pox, but the vesicular appearance and the eruption declining before the sixth day, cleared up the doubt. In the summer of 1776 varicella was very prevalent in Dublin, and attended with a high degree of fever both before the eruption and during the suppuration of the pustule, so that the experienced Dr. M'Bride acknowledged that there was scarce any circumstance left to distinguish them from small pox, save their drying off before the eighth day, and that they happened on those who had previously had small pox. Mr. Moore, in his History of Vaccination, records a case of varicella, attended with a highly inflammatory fever, and confluent eruption of pustules on the face, body, and limbs, which were large and purulent on the sixth day. Several physicians who saw the boy, pronounced the disease to be small pox; but it was proved to be a case of varicella. Eight boys, three of whom had had small pox before, and the remaining five cow pock, being exposed to the infection of varicella, seven had the disease in its usual mild form, and the eighth was the subject of the case just mentioned. Some boys who were known to have had varicella, escaped the infection, though exposed to it with the other boys.

It is not always so easy, as many suppose, to distinguish small pox from varicella. There is, to be sure, no difficulty in distinguishing a fully developed small pox, with high fever, copious pustular eruption, swelled face, and closed eyes, from mild varicella, with slight fever and a vesicular eruption, which shrivels and dies off before the fifth or sixth day. But the case is different where the former is mild, and the latter assumes a more severe

form with high fever and active cuticular inflammation, disposing the vesicles to suppurate, enlarge, and make slow progress. A correct diagnosis in such cases is extremely difficult, if not impossible. Dr. Willan assures us that in six years he saw 74 cases in which varicella had been mistaken for small pox occurring after vaccination, and on the other hand, he informs us of eruptive diseases after vaccination, which were at first supposed by several physicians and surgeons to be varicella, proving on inoculation to be small pox.

It is absolutely necessary to be very accurate in the diagnosis of these two diseases, otherwise we shall be guilty of errors highly injurious to the reputation of cow pock. The idea of varicella never being a severe disease, has been productive of much mischief. Ring records several instances of chicken pox being mistaken for small pox. And Dr. Macdonald cites many examples of the same error having been committed, even by men of eminence. I well recollect some myself, where the chicken pox was communicated by inoculation, instead of the small pox.

A greater degree of itching attends varicella, at the time of its eruption than variola, in which that symptom seldom occurs in any great degree till suppuration has taken place, hence in varicella the pustules are early broken and seldom assume a purulent appearance.

We should here also take notice of a well known fact, viz. that eruptions very similar to small pox sometimes originate in other causes. "I have," says Mr. Ring, "known pustules, when produced by external applications, the Herpes Milliaris and other diseases, so nearly resemble the small pox, as not to be distinguishable by their appearance from that disease."

CONCLUSION.

Having thus, according to the plan, which I proposed, detailed the principal facts and opinions relative to vaccination, and offered such remarks as were naturally

suggested by the subject, I shall conclude this Address with a few general observations.

The universal and rapid diffusion of cow pock inoculation, and the uniform success which has attended its progress, through most parts of the world, must impress upon the unbiassed mind the strongest conviction, that the applause with which it has been every where received, is deserved. I have judged it expedient to give a general view at some length, of the dissemination, in different countries, of this valuable discovery, and to recount the opinions and practices of the most eminent men, who have distinguished themselves in its cause, in the hope that my countrymen may thereby be encouraged to continue their exertions, and be sedulous to avoid the reproach, that the inhabitants of any part of that Empire which has given birth to the Author of this blessing, should be supine in availing themselves of its benefits. The Royal Jennerian Society in their Annual Report, dated March 5th, 1805, thus emphatically express themselves. "There is not a country in Europe which has not borne testimony to the merits of this great discovery. It is pervading with success the immense population of Asia, penetrating the regions of Africa, and is cordially embraced by the Indians in America. If this concurrent opinion of an applauding and grateful world be not sufficient to satisfy the doubts of every one, then we fear that no evidence will be sufficient."—And again, "Humanity and Benevolence are of all countries, and strangers to national hostility: and therefore we rejoice to learn (and hope that it will stimulate our own countrymen) that the exertions of the French nation have been extraordinary in promoting vaccine inoculation, particularly in Paris, where a Society is formed which has inoculated 60,000 persons in the last three months."

From the same authority we are enabled to state with infinite satisfaction, that since the introduction of vaccine

inoculation, the deaths by small pox in London diminished in an extraordinary degree.—Those in 1804 were only 574, whereas an average for 50 years within the bills of mortality was, according to Sir Henry Halford's Report to the Poor Law Commissioners, between three and four thousand, and within two months preceding the report before cited only, 42 died. Reports expressive of their undiminished confidence in vaccination have since, from time to time, been laid before the public, and in the last report of the Royal Jennerian and London Vaccine Institution, dated January, 1840, after stating that since January, 1830, to the date of the report, they vaccinated at the different stations 61,700 patients, and forwarded numerous supplies of vaccine lymph to different parts of the world, abroad and at home, they repeat their favourable opinion of the practice.

The decrease in the mortality from small pox in 1805 may in a great measure be attributed to the substitution of vaccine for variolous inoculation in the small pox hospital.—The inoculation for small pox being revived unfortunately in the latter part of the same year, and extended to 2,338 out patients, spread the infection so generally throughout the city, that 1,685 persons died. In 1827, only 277 died; but small pox being prevalent in 1838, it carried off 788, which is certainly a large number, but which, if compared with the average mortality previous to the introduction of vaccination, and when the population of London was much less than at present, the result will be decidedly in favour of vaccination.

What the number may be of those who have hitherto undergone the cow pock, in all quarters of the globe, it is impossible to say, but they were so far back as 1804 estimated at two millions. And if we may judge from the accounts since received, in particular from India, as already noticed, they now exceed calculation.

Notwithstanding the favourable opinion of vaccination ex-

pressed by parliament in 1802, and confirmed in 1806 by the most patient and searching inquiries instituted through the medium of the Royal College of Physicians, and notwithstanding the numerous and frequent declarations of medical men in Great Britain and Ireland since from time to time made in its favour, foreign countries at the same time vying with each other in their exertions to promote the practice and prevent variolous inoculation, and with the effect of extirpating small pox in many places where it had in former years committed frightful ravages, witness Prussia, Norway, Sweden, Denmark, Portugal, and the state of Lucca in Italy, (in which latter place, as we are informed by Sir James Clarke, vaccination having been generally adopted, small pox was entirely banished, whilst the people in the surrounding territory still suffered from the disease,) yet we see reason to lament, that it is not as generally adopted in these countries as might reasonably be expected. The practice, too, of variolous inoculation, by ignorant and mercenary quacks, has tended greatly to keep up and spread the infection of small pox, which, according to a statement lately made to parliament by Mr. Wakely, no bad authority, destroys 17,000 human beings annually in Great Britain and Ireland, which, however, is much less than the average annual mortality previous to the introduction of vaccination. Such a state of things loudly called for legislative interference and the wise and benevolent, enactment of last session, which has for its object the entire abolition of small pox inoculation and the general extension of vaccination, will, I confidently hope, remove from us a long existing source of mortality and sufferings, and give us and our posterity reason to venerate the name of JENNER.

Some of my readers may perhaps think, that I have made too many subdivisions of the subject, and been unnecessarily minute in description,—but let it be remembered, that by attention to minutiæ alone, can an accurate

knowledge be acquired in any department of Science. Paradoxical as it may seem, the milder any disease is, the more liable it is to be misunderstood or mistaken. Violent disorders are marked by strong and prominent features, which indicate at once their nature, and leave an indelible impression on the memory. But when the diagnosis depends upon symptoms apparently trifling, a scrutinizing eye, and studied reflection are requisite to form an accurate conception of any case. No man's sphere of observation, however enlarged, can be supposed to comprehend, all or even the principal varieties which may occur in any complaint, it is necessary however, in a practical treatise to describe as many of these as possible, to obviate embarrassment, when met with; and I flatter myself, that the greater number of such as have hitherto been observed in vaccine practice will be found arranged under one or other of the sections in the foregoing pages. Had many other diseases been spread abroad with equal rapidity, and the communication among professional men been as general and immediate, it is more than probable that greater irregularities would have been remarked, and the description of them been necessarily more prolix; and it is to be lamented, that correspondence is not more frequent at all times among men of science: we might then hope that the obscurity which envelopes many diseases long known among mankind would be dispelled, thus we should not be embarrassed with such contradictory accounts of their nature and treatment that no practical inference can be drawn from them. The cow pock has experienced a happier fate, yet even the most intelligent and careful practitioners, were frequently deceived by its appearances, in the commencement, and those who do not think it worth their while to bestow any labour in acquiring information on the subject must still be frequently in error. Foreseeing then the fatal consequences that may arise from any ignorance or over sight in conducting the practice,

we should make ourselves well acquainted with the true character of cow pock, in the first instance, and then be most assiduous in the discharge of our professional duty, so that no neglect or want of skill on our part, shall tend to lessen the advantages to be expected from vaccination. A spurious disease is easily propagated, one small deviation engenders another, until the original nature of it is entirely changed. Let us not however be deterred by the multiplied varieties which occur in the practice of Vaccination, nor be apprehensive that it is encompassed with insurmountable difficulties, for to sum up all in the words of Jenner. "A little practice in vaccine inoculation *attentively conducted*, impresses on the mind the perfect character of the vaccine pustule; therefore when a deviation arises, of whatever kind it may be, common prudence points out the necessity of re-inoculation, first, with vaccine virus of the most active kind, and secondly, should this be ineffectual, with variolous virus.* But if the constitution shews an insusceptibility of the one, it commonly does of the other."

* The inoculation with small pox being abolished by law, we must here substitute for it a second insertion of vaccine lymph.

October, 1840.

APPENDIX.

No. I.

A FAITHFUL SUMMARY OF THE FACTS AND OPINIONS, AS STATED BY THOSE PROFESSIONAL GENTLEMEN IN THE COUNTRY, WHO HAVE FAVOURED ME WITH THEIR ANSWERS TO MY QUERIES ON THE SUBJECT OF VACCINATION.

Dr. Armstrong, Cove.—Has been 38 years in practice, within which time he had two cases, in which the persons, being vaccinated during childhood by him, were, when grown up, attacked with small pox in an unequivocal form. Vaccination has certainly had a great effect in lessening the frequency of small pox in his neighbourhood. He considers the *permanency* of Cow Pock protective sufficiently encouraging to render vaccination an imperative duty. He has never re-vaccinated, but should recommend it on urgent occasions.

Dr. Adams, late of Dublin, now Isle of Achill.—Has been 30 years in active practice. Several cases occurred of small pox, subsequent to cow pock, in children vaccinated by himself; but in every instance he was able to trace the failure, to injury of the vesicle in its progress, or to some constitutional disturbance pre-occupying the system. Has seen many cases of modified small pox, after reputed vaccination. Several opportunities occurred to him of witnessing the striking and satisfactory protective influence of cow pock. He has not known of any ailment imputable to it, but thinks it less disposed to excite scrofulous affections than variolous inoculation. Had two cases of small pox occurring a second time.

Dr. Brunker.—During 14 years that he has been in practice, has vaccinated a considerable number annually, and has not met with one case of small pox occurring among his vaccinated patients. He attributes many of the cases of reputed failure to the imperfect manner in which the practice is conducted, of which he has witnessed instances. Not one fourth of the children born in his district are ever vaccinated; of course small pox is

occasionally very prevalent there. In *some* cases, where vaccination had been perfect, re-vaccination produced perfect vesicles, but in most instances merely an inflamed scratch.

Dr. Bredan, Portadown.—His experience leads him to conclude, that the true vaccine vesicle affords a *complete and permanent* protection against small pox. He attributes the reputed failures to imperfect vaccination, arising from some fault in the child's constitution at the time, such as supervening or previously existing cutaneous complaints, which are very prevalent in his district, rendering it very difficult to keep up a regular and true course of vaccination, and the unfortunate consequence is, that small pox always prevails, more or less, generally throughout the district. Yet he has never known the disease to occur after perfect vaccination, and the lower orders have great confidence in the practice.

Dr. Bell, Rostrevor.—Has not witnessed a case of small pox after vaccination. The result of his re-vaccinations afford, with one or two exceptions, *negative* proof of the permanency of the vaccine protection, in cases from 5 years to 30.

Dr. Berry, Tyrrel's Pass.—Had multitudinous opportunities of ascertaining the anti-variolous power of cow pock, by seeing those who had previously been vaccinated, exposed in the most favorable way for taking the small pox, even sleeping in the same bed with the infected; yet in 17 years extensive practice, no case occurred of small pox subsequent to vaccination performed by himself. Having heard, however, of many cases of failure, he has been led in some families to re-vaccinate the elder children. From some general observations of the Doctor, it is evident that he has been very accurate and skilful in his practice. Vaccinates at the third month; uses infection of the 7th day; never takes it from a spoon-fed child, nor from one with eruption on the skin.

Dr. Buchanan, Downpatrick.—In 20 years pretty extensive practice, he has not had a case of small pox, occurring in a patient vaccinated by himself. Careful vaccination in infancy, he thinks, renders re-vaccination in after life unnecessary. He has seen, in patients vaccinated by others, mild small pox, which left no marks on the skin. Met with no disease imputable to cow pock. By the successful practice of vaccination small pox has been eradicated in his district. He very rarely hears of a case of it. All the respectable practitioners in his neighbourhood entertain, with him, the most favourable opinion of cow pock.

Dr. Clifford, Trim.—Twenty-five years in practice; vac-

cinating from 150 to 200 patients annually. No case of small pox took place in any one whom he pronounced to be correctly vaccinated, except in one case lately, that of a boy 13 years old, who had cow pock when an infant; the small pox, however, proved mild, and there was no secondary fever. Has had frequent opportunities of witnessing the anti-variolous power of cow pock, which has almost entirely done away with small pox in his district. He has perfect confidence in the permanency of the cow pock protection, and thinks re-vaccination unnecessary.

Dr. Clayton, Athy.—Thirty years in practice; vaccinating from 200 to 300 annually. Has seen many cases of *modified* small pox, but not one which showed *all* the symptoms of variola. In one year he variolated 150, who had previously been vaccinated, of whom two-elevenths showed symptoms of liability to small pox, *i. e.* more or less eruptive fever and suppuration in the infected part. Some had a few, others a greater number of pustules, but not one had the least symptom of secondary fever, nor were there left any marks. Having subjected persons to variolous inoculation, at all periods after vaccination up to 25 years, without perceiving any difference in their susceptibility, his opinion was, that time had no effect in diminishing the protective influence of vaccination; but this opinion was shaken by an occurrence in his own family. His second son, who was satisfactorily vaccinated in infancy, being subjected seven years afterwards to variolous inoculation, with two other children, and all having resisted the infection; this boy, about a year ago, ten years after the variolous inoculation, was attacked with small pox, and with much severity; however, the disease was of a *modified* kind; desiccation took place after the fourth day, and perfect convalescence. The result of the Doctor's experience is, that he never recommends vaccination as a *preventive* of small pox, but always as a *protection* from its dangers, to be followed at a suitable time afterwards by variolous inoculation.

Dr. Crawford, Ballyshannon.—After a practice of 36 years, he is happy to bear testimony to the anti-variolous power of cow pock—very few cases of small pox having occurred to him after vaccination. In the instance of the daughter of Doctor B——, the areola formed prematurely, and she was vaccinated from the arm of Mr. E——'s son; both took the small pox twelve years afterwards. Five cases have occurred in his neighbourhood of small pox taking place a second time. He has thought it expedient to re-vaccinate, and believes that by so doing he has protected families from the small pox.

Dr. Cranfield, Enniscorthy.—Six years in practice, without seeing a case of small pox after vaccination. He thinks vaccination has lessened the frequency of small pox in his neigh-

bourhood. He recommends re-vaccination, and that vaccine inoculation should be enforced.

Dr. Clarke, Rathdrum.—Has been engaged in vaccine inoculation for 30 years; his annual average of vaccinations being from 100 to 150. No case of genuine small pox, subsequent to vaccination, where the vesicle passed regularly through its different stages, occurred within his memory, and he has had many satisfactory opportunities of ascertaining the anti-variolous power of cow pock. The practice has decidedly lessened the frequency of small pox in his neighbourhood, and there would have been still fewer cases witnessed, but that uneducated persons are privileged to inoculate the children of the poor for a small remuneration. Upon the whole, Dr. Clarke has met with nothing to shake his confidence in the practice. He is in the habit of re-vaccinating after a lapse of seven years.

Dr. Cumming, Armagh.—During 14 years practice in vaccination, he has not met a case of failure, nor any complaint imputable to cow pock. The practice has had a good effect, as the small pox is of very rare occurrence in his neighbourhood, except when it appears among the unvaccinated poor. He is of opinion that vaccination, when properly performed and gone regularly through all its stages, affords, in a *vast majority* of cases, *permanent* protection against small pox; and in the few which he met of small pox after *reputed* vaccination, the disease was mild, and altogether free from danger.

James Dowling, Esq., Mountmellick.—Has been 10 years engaged, and to a considerable extent, in vaccine inoculation, without having a single case of failure, or witnessing any complaint arising from cow pock. He has had many opportunities of exposing his vaccinated patients to small pox infection, but without effect. Vaccination has considerably lessened the frequency of small pox in his neighbourhood. Mr. Dowling being satisfied that the protection afforded by cow pock is *permanent*, considers re-vaccination unnecessary.

Dr. Drew, Cappoquin.—Has been much engaged in the practice of vaccination, without ever seeing a case of small pox occurring, after he had observed the whole course of the vesicle, and satisfied himself that it possessed its true character, though many of his vaccinated patients were exposed to the infection of small pox, which was often brought into his neighbourhood by itinerant inoculators, and occupied the same apartments, and even the same beds with those ill of small pox. Last November two brothers, *who were affected with an herpetic disease at the time of vaccination*, took the small pox. The system being once affected by cow pock, affords, in the Doctor's opinion, protection

for life from the small pox, if there existed at the time of vaccination no cutaneous disease, or other ailment attended with fever. Dr. Drew has never observed any disease but those of the skin apparently produced by vaccine, and even those he thought for the most part proceeded from neglect or exposure to infection.

Dr. Darby, Drogheda.—Has had much experience for 15 years in cow pock inoculation, and frequent opportunities of ascertaining its antivariolous power, yet he witnessed but one case in which a patient three years after vaccination, being exposed to the infection of small pox, was attacked with the disease in a mild form. He can from his experience vouch for the efficacy of cow pock, and thinks revaccination unnecessary where the previous vaccination has been properly administered.

Dr. Daly, Granard.—Has been nearly 20 years in practice, without witnessing a single case of small pox occurring after vaccination among his patients, nor any instance of cow pock appearing to excite disease in the constitution: he met with a well marked case of small pox affecting the same person twice. Should parents propose revaccination, he would not oppose it, though he has no reason to doubt the protective power of cow pock.

Dr. Enright, Tarbert.—Has not been very extensively engaged in cow pock inoculation; but the experience he has had, is decidedly in favour of it. The Doctor gives an account of a healthy child who resisted five successive attempts to communicate cow pock; and it is probable, that a trial with variolous infection would prove equally unsuccessful.

Dr. Enright, Ennis.—In 15 years pretty extensive practice in vaccination, he had no instance of small pox occurring in any of his vaccinated patients, and his opinion is, that a *genuine* vaccination is a *permanent* security against small pox; but from what he has heard he cannot say that there are not a few exceptions to the rule. He has lately heard of some well authenticated cases of small pox appearing a second time in the same person, but none occurred to himself. He has had frequent opportunities of ascertaining the antivariolous power of cow pock by the exposure of vaccinated patients, to the infection of small pox. He has frequently of late heard of complaints appearing to have been occasioned by cow pock in his patients.

Dr. Forsayeth, Templemore.—During 8 years practice, has not had a case of small pox affecting a patient vaccinated by himself, but he has seen cases of small pox twice in the same individual. He deems cow pock security *permanent*—thinks revaccination "only and always neccessary at a short period,—say half, or an entire year after;" solely to *test*, if the previous

infection secured, or as is generally expressed, "was taken." This he considers indispensable, having no other PROOF of the efficacy of the first vaccination. The following note is given in the Doctor's words:—

"In the summer of 1836, small pox was epidemic in Templemore; several cases of secondary distinct, and one of confluent small pox, came under my notice: one after vaccination, the remainder after small pox. The confluent case was in a girl six years old, who, two years before, being inoculated with small pox, had several marks of it on the face—she died. Many others occurred, but I would apply the term *varioloid* or *modified* small pox to those after small pox. A young gentleman now in the army, took small pox the same year naturally; he had *one* cow pock mark on the arm, and on inquiry, the old gentleman being alive, who vaccinated him and five others, then in the family at home, elder and younger, from 12 to 21, we found he *drained* the single vesicle to vaccinate another child; he had a severe attack, but recovered; soon afterwards each of the other children, separation not being enjoined, took the fever, and three or four effete pimples, I could not call them pustules, appeared and declined in a few days; they only kept their beds two days, one not at all. Soon after the mother took ill of variolous fever, and presented in a few days about 22 specks on the face and chest, and was very ill for some days. She was formerly inoculated for small pox, and retained a few slight marks on the face. I could multiply other similar instances that year—but this shows in a strong point of view, the efficacy of vaccination for any period, and the inefficacy of small pox inoculation against itself in several cases; for though vaccinated myself 30 years ago, at least, I did not catch it, though in constant attendance on my patients."

DR. FAUSSETT, Ballina.—Forty years engaged in the practice of vaccination, during which time he saw but two cases of small pox after vaccination performed by himself, and *in those he had not an opportunity of inspecting the arms at the proper periods after the inoculation.* He has had very many opportunities of testing the protective power of cow pock, by exposing his vaccinated patients to variolous infection, and in many instances, inoculating them at different periods remote from their having had the cow, with no other effect than the appearance of slight inflammation, and a few pustules on the inoculated part which die off in a few days, without any constitutional affection. Having taken infection from modified small pox, which died away after the 6th day, occurring in those who were reputed to have had cow pock, he produced *regular* small pox of a mild and distinct kind, *which ran the usual course* on patients who never had had small pox or cow pock. The distinction, the Doctor observes, was remarkable, and strongly pointed out the

antivariolous influence on the persons so vaccinated, and yet retaining the infectious influence peculiar to small pox. He knows of no new or other complaints occasioned by cow pock; vaccination has had a considerable influence in diminishing the frequency of small pox in his neighbourhood, where the prejudice against cow pock has entirely ceased. So great is his confidence in the *permanency* of the protection afforded by vaccination when *skilfully administered*, that he considers *revaccination* altogether unnecessary. All his children, who are now grown up, were vaccinated during infancy, and have frequently since been exposed to variolous infection without effect, particularly his son the Doctor, who is constantly attending small pox patients at hospitals and dispensaries. Dr. Faussett constantly practises Bryce's plan as a *test*, and feels satisfied in the full conviction, that the first vaccination, when perfect, is as permanent and complete in the immunity it affords as small pox itself, and that no advantage beyond the *test* will be afforded by repeating the operation.*

Dr. Fry, Farbane.—Has been 18 years in the constant and pretty extensive practice of vaccination. Many of his patients have been exposed to variolous infection under circumstances most favourable for its reception, such as remaining in the same room, and even in the same bed with the infected; and this was particularly noticed during the summer before last, when the small pox raged violently, yet only *one* had small pox after reputed vaccination, and even in that solitary case the parents had neglected to bring back the child for inspection on the proper days, from a dislike to have infection taken from the arm. He considers revaccination a prudent precaution about the 7th year, and constantly practises it. He has seen three cases, in which he could not be mistaken of small pox occurring a second time in the same individual. Small pox is kept up in his neighbourhood by itinerant persons extensively inoculating with variolous infection.

Dr. Field, Black Rock.—Has been 17 years in practice, and being Incumbent of a dispensary for 12 years, in a very populous neighbourhood, must consequently have vaccinated a vast number; though he has had many opportunities of observing the antivariolous power of cow pock, in a densely inhabited district where small pox so frequently prevails, he has not known a case of small pox occurring in any patient where he had *an opportunity of watching the cow pock through all its stages.*

* It affords me infinite satisfaction to find, that a man, with whom I have been acquainted for nearly half a century, and for whose industry and talent for observation I have always had a high respect, should entertain the same views with myself on this most important subject.

He thinks that when vaccine inoculation is administered by a competent person, there is no additional protection to be expected from revaccination. The Doctor relates a remarkable case in proof of the antivariolous power of cow pock:—A woman aged 30 years, who had been vaccinated when a child, and her youngest child, aged two years, who had been vaccinated a year before, slept in the same bed with her two eldest children, who had not had the cow pock, ill of confluent small pox, one of whom died and the other had an unexpected recovery, yet the mother and her vaccinated child, though remaining in the same miserable bed, until the death of one child and the recovery of the other, escaped the small pox.

Dr. Ferguson, Leixlip.—During 36 years that he has been in extensive practice, he has vaccinated almost all the children of the nobility and gentry of his populous district, and in no instance in that class has he seen a case of small pox subsequent to cow pock. He also vaccinated the entire of the poorer classes, among whom he saw many cases of small pox appearing afterwards during epidemics, which however he attributes solely to irregularity, chiefly in parents not returning to have their children examined at the proper periods, but he never heard of a death among them. He has attended for many years a charter school, containing 150 children, and never witnessed a severe case of small pox there; and in a Fever Hospital, that he has been attending for 20 years, not more than three or four cases of small pox were admitted during that time. The Doctor is satisfied from his experience, that where the cow pock has gone regularly through all its stages re-vaccination is unnecessary, though to satisfy parents he often performs it.

Dr. Fullerton, Garvagh.—Has had charge of a Dispensary, with a tolerable share of private practice for eight years in a populous district, vaccinating from 50 to 100 annually, without meeting a case of small pox after perfect vaccination. He is convinced from all he has seen, that vaccination gives almost perfect security against small pox; and he has not therefore thought it necessary to revaccinate, unless parents wish it. Vaccination is not adopted as generally among the lower orders in his neighbourhood, as could be wished from mere laziness. They will not take the trouble of bringing their children to be vaccinated; but when they hear that a child has "got the pock" in their district, they repair thither, and take some of the matter on a needle or pin, and insert it in the arm; or at a later period, they take part of the crust, which they bind over a few scratches previously made on the arm with a pin, and produce a "fine pock" as they call it.

Dr. Geoghegan, Kildare.—Thirteen years in practice—vacci-

nating annually about 20 patients. In May, 1837, he attended Lieutenant S——, of the 15th Hussars, in confluent small pox; he was vaccinated when a child, and had on his arm a cicatrix *nearly the size of a shilling*.* In 1836–7, the Doctor had innumerable opportunities of ascertaining the antivariolous power of cow pock, as small pox was then epidemic in his district, and no case of it occurred after vaccination. He thinks vaccination has lessened the frequency of small pox, the infection of which however is still kept afloat by *handy men* who travel through the country inoculating for one shilling each.

Dr. Griffin, Limerick.—Has seen no bad effects from vaccination, but witnessed many instances of small pox after reputed vaccination, and very rarely an instance of small pox occuring a second time. He believes the protection is not absolutely certain in either vaccination or variolation, but thinks that general experience has amply proved, that the former is more insecure, though infinitely less dangerous than the latter.

Dr. Gray, Galway.—Twenty-four years in practice, vaccinating annually about 200 patients; and of those *who remained under his observation*, not one have taken the small pox, though many of them have been exposed to variolous infection, his own children among the rest. Has had no new or other complaints occasioned by cow pock. Vaccination has had a great effect in lessening the frequency of small pox in his neighbourhood; and he thinks the disease would be little known if the practice of variolous inoculation was prohibited. The Doctor thinks, that he who has had cow pock properly and constitutionally, is as safe from small pox during his life, as if he had had genuine small pox; and he cannot see why vaccine virus more than any other animal poison, should require to be renewed every seven years. He attributes many of the cases of alleged failure of cow pock to ignorance or inattention.

Dr. Hall, Boyle.—Whose practice has been extensive in vaccination, and almost coeval with the discovery of it, states that he never witnessed but one case of small pox after vaccina tion, though the exposure of his vaccinated patients to variolous infection has been almost constant, owing to the general practice of variolous inoculation by itinerant and illiterate practitioners, who thus keep up and spread abroad the infection. The Doctor believes vaccination to be a *permanent* security against small pox. "During a residence," says he, "in Boyle of more than 20 years, it is impossible, the small pox being so often prevalent, but I must have witnessed glaring instances of the failing secu-

* I suspect the hussar officer had not the genuine cow pock.

rity of vacccination, if it had been constantly growing weaker according to the opinion of some."

Dr. Hoskins, Clones.—Has been vaccinating eight years without meeting a case of small pox where vaccination had its due effect, *as witnessed by himself*, It is his rule not to inoculate where there is eruption or any constitutional ailment attended with fever. Some of his vaccinated patients have slept in the bed with others ill of small pox, without effect—has not seen any ailment excited by cow pock—cannot say that vaccination has had much effect in lessening small pox in his neighbourhood, the lower orders being so anxious for small pox inoculation, which occasioned the death of numbers last year. He considers vaccination to be protective in most cases—has tried revaccination in a few instances, but cannot give a decided opinion upon the subject.

Dr. Hanan, Tallow.—In practice 38 years—vaccinating during that time frequently among people of all ranks, and extensively at the Dispensary, to which he had been 20 years attached. Three cases of small pox, not confluent, occurred 20 years after vaccination in members of his own family. In November, 1837, they were living in the same house; the small pox being prevalent in the town at the time, they were attacked with the usual precursory symptoms of small pox followed by pustules, which terminated in the usual way. Two persons, mother and sister, who were in the house, and constantly exposed to the infection, escaped Having had opportunites of ascertaining the protective power of cow pock, he is quite satisfied that in the *great majority* of cases it is, when *properly* used, a sure preventive of small pox. He inoculated with small pox infection some cases 10 years after vaccination, but without effect—has not seen any complaints imputable to cow pock; vaccination has certainly lessened the frequency of small pox in his neighbourhood. From what occurred in his own family, the Doctor is disposed to recommend revaccination at stated periods.

Dr. Huston, Coleraine.—Already mentioned as one of the very earliest promoters of vaccination in Ireland. He has been 40 years extensively engaged in the practice, without ever meeting a case of small pox after vaccination, except one, and that was his grandson, whom he inoculated with lymph obtained from the Cow Pock Institution, *but had not an opportunity of watching the progress of the case as he always did in other cases*, and several years afterwards the boy took the small pox in a severe form. Some of his vaccinated patients lived in the same apartments, and slept in the same beds with others, labouring under the worst forms of small pox, but without effect. He has met with no ailment imputable to cow pock, and says that vaccination,

by judicious and careful hands, has incalculably lessened the frequency of small pox in his neighbourhood. "I never have had," says the Doctor, "in my practice, the least reason to doubt the *permanent* sufficiency of vaccination against small pox; and I believe, if every other practitioner had been as vigilant as I have been, and as choice in the quality of the virus, and its progress during the course, we would rest satisfied, that the antivariolous power of cow pock will never become effete; but the practice has been much prejudiced by poor parents submitting their children to ignorant itinerants, and intelligent men, unobservant of their obligations, to the public."

Dr. Hutchinson, Carrick-on-shannon.—He has during 12 years practice, vaccinated a great number, and has had the greater part of them under his own inspection constantly ever since; and he can positively state, that no case of small pox has appeared among his vaccinated patients, although that disease is propagated every year in his neighbourhood by itinerant inoculators, who get sixpence for each child; and he regrets to say, that many have fallen victims to it. He has re-vaccinated 12 or 13, but has no means of judging of the necessity of the practice: vaccination has lessened the frequency of small pox in his district. He has observed no supervening complaint imputable to cow pock.

Dr. Irvine, Camolin.—Has been extensively vaccinating in private and dispensary practice for 17 years, without seeing a case of small pox in any patient who had had the cow pock to his satisfaction, though many of his vaccinated patients were exposed to the infection of small pox, which is constantly kept up by itinerant quacks inoculating the children of the poor. Several hundreds had small pox in his neighbourhood last spring; but though he heard of small pox occurring after vaccination, he had no personal knowledge of such an occurrence. He mentions a case of small pox appearing on the 10th day of vaccination—regrets very much to see unqualified persons permitted to go through the country inoculating for small pox.

Dr. Jacob, Maryborough.—Has been 13 years vaccinating—is not aware of small pox occurring in any of his vaccinated patients, though frequently exposed to its infection. He entertains great confidence in the protective power of cow pock, but nevertheless believes that small pox sometimes occurs after vaccination, and has, no doubt, he attended such cases. Vaccination he believes, has had great effect in lessening the prevalence of small pox in his neighbourhood. He has seen three cases of small pox affecting in a severe and fatal form, persons who previously had the disease, and were *pitted* by it. He believes that in a large majority of cases, the vaccine protective is *permanent;*

but he has not practised revaccination, nor is he prepared to give an opinion upon the subject. Variolous inoculation is much practised by unqualified peasants in his part of the country, where the lower orders prefer it to vaccination.

Alexander Lemon, Esq. Surgeon, Rockcorry.—Has been nine years in practice, vaccinating annually from 60 to 80 children. A single case has not occurred of small pox subsequent to cow pock, where he was satisfied the vaccine lymph was genuine, and had an opportunity of watching the progress of the disease through all its stages. Where small pox did occur after vaccination, the failure was invariably owing to the child being affected with herpetic eruption or other constitutional affection. He has frequently exposed his vaccinated patients to small pox infection without effect. Vaccination has had a most decided effect in banishing small pox from his neigbourhood; in fact, he did not see more than a case or two of it during the last three or four years. The complaint is sometimes brought in by strollers and paupers, but the upper and middle ranks who attend to vaccination, find it a *complete* protection from small pox, and feel such confidence in its *permanency*, that revaccination is seldom practised.

Samuel Moore, Esq. Surgeon, Rockcorry.—States that the result of his experience for 30 years is quite confirmative of the answers given by his friend, Mr. Lemon.

Dr. Marshall, Belfast.—During 30 years pretty extensive practice, has not had a case of small pox subsequent to cow pock, where he inoculated the person himself, and inspected the arm regularly afterwards, though many of his vaccinated patients were subsequently exposed to small pox infection. Vaccination has had a decided effect in lessening the frequency of small pox in Belfast, where that disease is very rarely seen, except among the poor and strangers. The Doctor adds, "If I spoke from the result of my own experience, I should say that the protection afforded by *perfect* vaccination is *permanent*. I have applied the small pox virus to the arms of my own and several hundreds of other children, and young persons up to the age of 25 years, whom I had previously vaccinated and watched carefully, without any except the usual local effect. I may further observe, that during the whole of my practice, which has been pretty extensive among children, I have not met more than three or four cases where, by exposure to small pox contagion, after vaccination, any constitutional disturbance was produced, and the eruption which followed was trifling, and disappeared in two or three days. This remark does not, of course, apply to the children of the poor, many of whom I vaccinated, but did not see afterwards."

Laurence Middleton, Esq. Mullingar.—Has been 10 years in practice, vaccinating annually from 200 to 300 children. Many cases occurred to him of small pox, which ran regularly through all its stages, subsequent to vaccination, which was carefully performed,—has had 20 or 30 such cases within the last three months—has had frequent opportunities of witnessing the antivariolous power of cow pock, by exposing his vaccinated patients to the infection of small pox. Vaccination has lessened the frequency of small pox in his neighbourhood. He knows of no complaints imputable to cow pock.

Dr. Middleton, sen. Mullingar.—Who has been 30 years engaged in the practice, is of opinion that vaccination, if properly managed, will be found a *permanent* protection against small pox. He attributes all failures of cow pock to some irregularity in conducting the practice, allowing the vesicles to be rubbed, and the lymph to flow off, and neglecting to examine the arms at the proper periods after vaccination, occasion, he thinks, many failures; and he is of opinion, that if "cow pock is once properly and carefully ingrafted in the constitution, it needs no repetition."

Dr. M'Dermott, Kells.—Has been 38 years practising vaccination pretty extensively, without meeting after vaccination a case of small pox. Twenty years ago he witnessed in three of his vaccinated patients eruptions, which were first considered to be small pox; but from watching them during their progress, he satisfied himself that they were not variolous. His vaccinated patients, in some instances, have slept with impunity, in the same beds with those ill of small pox; and he has inoculated with small pox, persons who had been vaccinated years before, with no other effect than some slight inflammation at the inoculated part, and sometimes a few pustules around it, but no constitutional sickness. Vaccination has lessened the frequency of small pox in his district, but the infection is sometimes spread abroad, and with fatal results, by itinerant quacks going through the country inoculating with small pox. No complaints appear to him to have been occasioned by cow pock. Being at Killarney 34 years ago, he heard of *shinah or sihnagh*, the Irish name for a cows teat, as preventive of small pox. In 1801, Dr. M'Dermott sent vaccine lymph to his brother in Jamaica, where it succeeded perfectly; and in a subsequent correspondence of 20 years, he heard of no failure there. With some of the men of the Meath Militia, whom he vaccinated in 1800, and who are still in his neighbourhood, he has had opportunities of testing the *permanency* of the vaccine protection, down to the present day.

Dr. Mitchell, Newtown-Mountkennedy.—In practice 20

years, in a population of about 10 or 11,000. Many cases of small pox occurred to him where he had every reason to know, from personal observation, that the persons had gone fairly through the process of vaccination. In these cases the small pox was almost uniformly modified. The fever, though setting in with the average degree of violence, was suddenly arrested on the appearance of the eruption, which was scattered, small, hard, and imperfect in their course, and never proving fatal; one case, he describes, as being very severe, and the patient much pitted. Five cases of small pox after vaccination occurred in one house, three children, an apprentice, and a young woman. The Doctor has seen the power of cow pock in disarming small pox of its virulence, and therefore its infinite value, could it do no more, strikingly exemplified. Small pox, in its most virulent form, broke out in a small neighbourhood with scattered population; nine persons who had never been vaccinated took the disease—none very young, and few were adults—five died. Eleven who had been vaccinated were attacked; and although in most of these the eruptive fever was violent, it was soon arrested, and the subsequent disease proved mild and favourable. He never, if possible, vaccinates a very delicate child, or one subject to eruption. He has seen numberless instances of children, who had been vaccinated, living in the same apartments, and sleeping in the same beds with small pox patients with perfect impunity; and he is of opinion that cow pock, in a vast majority of instances, secures from small pox completely, and *for life;* and that small pox when it does occur, is almost invariably mild. Vaccination has greatly lessened the frequency of small pox epidemics in his district; but he complains that the disease is often introduced by itinerant inoculators going through the country, and thus spreading the infection among the poor. Dr. Mitchell thinks the protection from vaccination, though it may vary as to *degree*, is permanent as to *time*—that the person who is secure for the first month, is also secure for life. He has seen so many children take small pox, one, two, or three years after, apparently perfect vaccination, that he cannot believe the first seven or 10 years, enjoy any peculiar immunity, nor does he believe the cow pock to wear out by lapse of time. He thinks it a wise practice to revaccinate.

Dr. Magee, Keady.—Has been vaccinating 25 years; and of many thousands, he does not recollect a single case, with the progress of which he was satisfied ever having taken small pox of a severe form. Many, he says, have had a disease similar to small pox, but greatly modified and terminating about the seventh day, without leaving pits or any of the sequelæ of that disease—of the deaths which occurred during the last epidemic none were after vaccination. He has had satisfactory proofs of the protective influence of cow pock in witnessing the exposure of

vaccinated patients to small pox infection with impunity. Vaccination is so general in his neighbourhood, that he has not seen a case of small pox for 10 or 12 years. He has revaccinated on some occasions, but could never reproduce the true vesicle; however, he approves of revaccination.

Dr. M'Dermott, Killarney.—Sixteen years practising vaccination, and no case of small pox, modified or otherwise, has occurred in any person, he himself had vaccinated, but he saw six or eight cases of small pox, where he was assured the individuals were regularly vaccinated, of which the usual marks on the arms afforded proof. In two of these cases the eruptive fever was very violent, but on the eruption appearing, it subsided immediately. The pustules did not fill, and soon dried up; and although the face was nearly covered, no marks remain—the rapid decline of fever and other bad symptoms, so unlike what occurred to other small pox patients, who had not the benefit of vaccination, leads the Doctor to attribute the safety of his patients to their previously having had cow pock. In the other cases the symptoms were very mild and transient—*a mere nominal disease.* He attended lately a child, in private practice, four years old, who died of small pox, though when a year old he had the disease in so regular a form, that infection was taken from him, which produced in others perfect small pox. The Doctor regrets, as many others do, the imperfect manner in which vaccination is practised in many instances. The country people bring their children to be "*cut,*" as they term it; and if the arm festers they thing all is right, and, having an objection to infection being taken from them, they never return, and therefore must remain in a doubtful state. Preventing those itinerant quacks from inoculating with small pox, will, he thinks, be productive of great benefit. Having full confidence in the *permanency* of the vaccine protective, he considers revaccination quite unnecessary, where the individual had previously been properly vaccinated.

Dr. Moorhead, Hillsborough.—Has been engaged for 18 years in the extensive practice of vaccination, and no case of small pox occurred on any patient vaccinated by himself. In the cases he witnessed of failure, he did not consider the small pox genuine, but modified the last stage being milder and shorter than is observed in these cases, where cow pock had not been used. He has had several opportunities of satisfying himself of the protective influence of cow pock, by exposing his vaccinated patients to variolous infection. No complaints imputable to cow pock occurred in his practice. Vaccination has had a great effect in lessening the frequency of small pox in his locality; and his opinion of the practice is, that its protective powers are great, and when not complete, the subsequent disease is modified.

While the Doctor had under revaccination the daughters of a Colonel, who were stated to have been vaccinated during infancy, their brother, a clergyman, who, it is presumed, had also been vaccinated, though the fact is not stated, came on a visit to the house, and soon after took the small pox, which was in a neighbouring house, of which he died. His sisters, who closely attended him throughout, escaped. They had taken the cow pock favourably, and lymph taken from their arms produced in others the true vaccine vesicles. The Doctor also mentions the case of a young lady who was vaccinated when an infant, afterwards inoculated with small pox, and lately had small pox in a very severe form, but recovered. Some vaccinated children were in the house at the time, but did not take the complaint.

Charles Neilson, Esq., Killala.—Several years conversant with cow pock, and has vaccinated several hundred patients. No case of small pox after vaccination took place in his own practice; but four years ago he met with a very virulent case of it in a young person who had been vaccinated, as was asserted, perfectly, several years before, but recovered. There were in the house at the time two brothers and six sisters; the younger four he had vaccinated between the years 1821 and 1825. On the appearance of the eruption on the young gentleman, Mr. Neilson re-vaccinated them all, except the elder. Only one, a young lady of 22, took the disease, and the eruption appeared slightly the day after re-vaccination, but it died off as the cow pock advanced, and she was the only one of the party in whom the cow pock went regularly through all its stages. The three next had the spurious form of the disease; on those he had himself vaccinated—the arms healed without any inflammation. Mr. Neilson always *tests* his patients on the 8th day, (in which he deems a most necessary practice,) and if it be not satisfactory, he repeats the operation at a future period. He mentions another case of small pox, which occurred after cow pock, about the same time; he did not, however, witness the vaccination, or subsequent attack of small pox. He has no doubt whatever of the anti-variolous power of cow pock, having known several instances of persons who had been vaccinated several years before, sleeping in the same bed with persons ill of small pox, without any ill effect. The failures which have occurred appear to him to arise from want of attention in ascertaining that the constitution has been affected, and in many instances from the arms not being seen at the proper periods after vaccination—parents and friends being to apt to suppose all is well when they see the arms inflame. Small pox was very general and fatal in his neighbourhood some years ago—not so since vaccination has become more generally practised. Small pox has not appeared of late as an epidemic. He thinks the disease would soon be eradicated, if quacks were prevented from prac-

tising variolous inoculation. Mr. Neilson is pretty certain if sufficient attention be paid in the first instance to see that constitutional affection has taken place, there will be very few failures, and he does not think there is a *necessity* for re-vaccination, though it may be used to satisfy parents. He lately failed in three attempts to vaccinate a child.

Dr. T. H. Orpen, Cove.—Has not, during many years that he has been engaged in cow pock inoculation, had a case in his own practice of small pox after vaccination. From October, 1837, to the following December, small pox prevailed in Cove to a greater extent than it had been known for several years before. The disease was imported from Liverpool by an American ship. The children of the person in whose house the infected from the ship lodged, were attacked in three weeks after, and so the disease spread through the town. Of 61 cases of small pox, where vaccination had *not* been practised, 12 died. Of 37 cases which occurred among children who bore marks of previous vaccination, all had the disease in a modified form, and none died.* He has had innumerable instances of the exposure

* The following statistical table of the comparative effects of small pox upon persons who had been vaccinated or inoculated with small pox, and upon persons who had received no protection in any shape, will be an important addition to Dr. Orpen's statement. The first part is from the observations of Dr. Thompson, of Edinburgh; the second from the experience of the Military Asylum at Chelsea; and the third from cases observed by Dr. Dodd, one of the Secretaries of the Vaccination Section. The whole I have extracted from the *Official Circular* of the Poor Law Commissioners.

	Number of persons attacked with small pox.	Of whom had previously.	Of whom died.
1. Edinburgh	586	Vaccination . . 310	1
		Inoculation . . 71	3
		Neither cow pock nor small pox . 205	50

	Number of cases reported as having had, previously to admission—		Were attacked with Small pox	
2. Experience at the Military Asylum at Chelsea.	Vaccination	3,060	24	0
	Small pox	2,532	26	3
	(Two children also died who had neither undergone small pox nor vaccination.)			
	Vaccinated subsequently to admission	628	3	0

				Had the disease		
3. Cases observed by Mr. Dodd 1837.	Persons attacked, 201	Vaccinated	114	Mildly 91	Severely 23	2
		Unvaccinated	87	Mildly 29	Severely 58	17

with immunity of vaccinated patients, to variolous infection, and he gives some cases of the co-existence of small pox and cow pock, both going through their course regularly. He has had several cases of varioloid eruptions on children, with vaccine cicatrices on their arms. Vaccination has had a great effect in diminishing the frequency of small pox, which has seldom appeared of late except as in 1837. During that epidemic several instances occurred of varioloid eruptions on persons *well marked* by small pox, which ran their course in a much shorter period than the regular small pox, and left no marks. All his neighbours having the fullest confidence in the beneficient protecting powers of cow pock, are anxious to have their children vaccinated at the earliest period. Having met nothing to weaken his confidence in the *permanency* of the vaccine protection, Dr. Orpen remains unconvinced of the *necessity* of re-vaccination.

Dr. O'Grady, Lamanca, Swords.—Has been 22 years engaged as a practitioner in medicine, and extensively so in cow pock inoculation, vaccinating annually about 200 children. It appears from his dispensary register and note book, that no case of small pox after vaccination occurred in his practice, although *many* of his vaccinated patients were exposed, young and old, to the infection of small pox in a highly concentrated form, and under circumstances most favourable for its communication. He knows of no new or unheard of complaints caused by cow pock. Vaccination has decidedly lessened the frequency of small pox in his populous district; it never occurs to any extent of late, except the infection is introduced by itinerant quacks, who, unfortunately have great influence over the lower orders. Two ladies and a gentleman have been attacked a second time with small pox; the former were marked with the disease in the first instance; both had the disease a second time in a confluent form, and highly dangerous; and both were marked a second time. The gentleman's case was milder, and apparently modified by the first attack; he had many pustules, however, with mild fever, differing in duration only from the fever which attends modified small pox, after vaccination; in the former continuing until the pustules died away; in the latter disappearing suddenly when the pustules were at the highest state of distinction. So decided is his opinion as to the *permanent* efficacy of cow pock, that he never re-vaccinated his own children, nor should he be induced to do so in other cases, except at the particular request of parents. Dr. O'Grady has adduced the most satisfactory evidence in support of his very favourable opinion of vaccination.

Patrick O'Rourke, Esq., Enniscorthy.—Has been 27 years engaged in vaccination, very extensively since 1821, vaccinating from 300 to 400 annually; and having kept a detailed register of all his cases, he can speak confidently as to the result of his

experience. No case occurred within his practice of small pox after cow pock, where the patient was vaccinated by himself, and went through the complaint to his satisfaction. Many of his vaccinated patients were exposed in every possible way to the infection of small pox, by inoculation, and by inhabiting the same apartments, sleeping in the same beds with the diseased, but without effect. His register affords several striking instances of this description. He has often heard of persons being ill of small pox after vaccination; but on close examination he could trace the failure to the want of proper attention on the part of the practitioner, or to the neglect of parents in having them submitted for examination on the proper days after vaccination. Another source of error was the want of discrimination between varicella, which was sometimes prevalent, and the varioloid disease. Vaccination has had a great effect in lessening the frequency of variola in his district, though the disease has been more frequent, but he thinks milder, this year than within any former year, but it attacked the *unvaccinated* only. He mentions two cases of small pox appearing twice in the same person, both were pitted. Mr. O'Rourke has had so much experience of the *durability* of the protection afforded by cow pock, that he never thinks re-vaccination indicated, except where he has reason to believe the constitution not to have undergone the vaccine influence, as when the vesicles are rubbed or otherwise injured in their progress, or when there is present at the time of vaccination an eruption on the skin, or some constitutional ailment likely to derange the cow pock.

Dr. O'Connell, Roscommon.—Fourteen years rather extensively engaged in vaccination, both in dispensary and private practice, without meeting a case of small pox after vaccination, where he attended the patient himself. He inoculated with small pox, patients who had been vaccinated some years before with the effect only of some slight feverish excitement, and a few pustules around the incisions on the arm, but no where else. He heard of small pox affecting persons who were vaccinated by his predecessor, but no inference can be drawn from those cases, as the patients were never seen by a medical man after the insertion of the vaccine virus. No new or unheard of complaint after cow pock is known to him, and he has every confidence in vaccination.

Dr. O'Brien, Ennis.—Has been engaged in vaccination since 1802. No case of small pox after vaccination occurred to him, but he has been told that his son, Mr. Octavius O'Brien, lately had the complaint in Dublin. He had many opportunities of ascertaining the anti-variolous power of cow pock. Vaccination has lessened the frequency of small pox among the better classes, but not among the lower orders. Where the vaccine lymph is pure and recent, he has every confidence in its effects.

John Pierce, Esq. Newcastle.—Upwards of 20 years engaged in vaccination; first at the King's County Infirmary, and lately at the Newcastle Dispensary. A child whom he vaccinated, and who had the pock in a satisfactory manner, being at the time of vaccination in good health, and free from eruption, took small pox in a year after and died, apparently of throat affection. He lately had three cases in one family of small pox occurring in adults, who had been vaccinated in childhood—a clergyman, his lady, and brother. The lady took ill first, and had a most copious, but not a confluent eruption, which ran the usual course. An infant at her breast was vaccinated the fourth day, and escaped. The clergyman took the disease from his lady, and had a most abundant, but not a confluent crop. Both had the disease severely, but recovered, and are not likely to be marked. The brother, a youth of sixteen, had the disease in a milder form. The nurse, who was vaccinated when an infant, and a child about two years old, who was also vaccinated in infancy, escaped. Has witnessed several instances of vaccinated persons being exposed with impunity to small pox infection. He cannot say that vaccination has had much effect in lessening the frequency of small pox in his district; the prejudice against it is not removed, and itinerant small pox inoculators infest his place periodically. He witnessed a case of small pox of a most virulent character—he seldom saw a worse case—in a gentleman who had the disease and was pitted by it when a child. On the subject of re-vaccination he cannot hazard an opinion, but thinks it is advisable. The lower orders have such a dislike to have infection taken from their children, that they break the vesicles to prevent it, so not one half bring back their children with unbroken vesicles.

George Pierce, Esq., Tullamore.—Having been upwards of 20 years extensively engaged in vaccination, he feels every confidence in the practice. The lower classes in his district are decidedly in favour of the practice, from seeing many of their vaccinated children sleep with impunity in beds with others ill of small pox, brought into the neighbourhood, in many instances, by itinerant inoculators. He has seen cases of modified small pox after vaccination, but has not observed a case where small pox was regularly gone through after vaccination, or where dangerous symptoms occurred during the progress of the case. Has had frequent opportunities of witnessing the anti-variolous power of cow pock. Vaccination has decidedly lessened the frequency of small pox in and about Tullamore. Has seen a very bad case of small pox, confluent, in a young man who had been inoculated at three years of age, with variolous matter, and whose family are certain he then had it regularly. The young man narrowly escaped, and is frightfully marked. Mr. Pierce has not re-vaccinated his own children, nor does he deem re-vaccination necessary, when there has been once perfect vaccination.

Dr. Plant, Kingstown.—Twenty-five years practising vaccination, and has not had a case of small pox after cow pock, though he has had many opportunities of witnessing the exposure of vaccinated patients to small pox infection. Vaccination has lessened the frequency of small pox in his neighbourhood. He is perfectly satisfied with the security afforded by cow pock.

Dr. Rogan, Derry.—Has been pretty extensively engaged in vaccination for thirty years. Never witnessed the occurrence of small pox, in a severe form, in any one vaccinated by himself. Among his own patients he has seen a few cases of mild small pox, which passed rapidly through its stages. Many instances of the protective influence of cow pock occurred to him, and he remarks that small pox has become much less prevalent since the introduction of vaccination. He is quite satisfied as to the *permanency* of the cow pock protection, and never re-vaccinates, but merely to quiet the fears of parents.

A. Robinson, Esq., Surgeon of the Armagh Infirmary.—Fifteen years engaged in vaccination, and has no personal knowledge of regular small pox occurring to any of his vaccinated patients. Has had frequent opportunities of witnessing the prophylactic virtue of cow pock. Vaccination has lessened the prevalence of small pox in his neighbourhood. The best proof he can give of his confidence in the *permanency* of the vaccine preservative, is his not re-vaccinating any of his own children.

Dr. Smyth, Tynan.—Has vaccinated between 200 and 300; of whom many have been since exposed to variolous infection, but without effect. Vaccination has lessened the frequency of small pox in his locality. He thinks it would be well to re-vaccinate every five or seven years.

Dr. Sturgeon, Portadown.—He has had a pretty fair share of practice in vaccination for 16 years, and has not had in his own practice a case of small pox after vaccination. Often witnessed in his vaccinated patients the preservative power of cow pock. Vaccination has lessened the prevalence of small pox in the neighbourhood of Downpatrick and Blackwatertown. Dr. S. having had cow pock in his infancy, intends having himself re-vaccinated this summer.

Richard Shannon, Esq., Rockcorry.—During 17 years pretty extensive practice, he has often observed the powers exerted by cow pock in resisting the infection of small pox. He vaccinated two brothers sixteen years ago; a third would not submit, and in process of time took small pox. The vaccinated brothers escaped, though they ate, drank, and slept with him. This and a similar instance have given Mr. Shannon full confidence in vaccination.

T. Butler Stoney, Esq., Knockadoo.—Reports the case of an infant, four months old, who had suffered considerably for some time from a watery eye, supposed to proceed from a scrofulous habit, and was completely and permanently relieved by vaccination.

Dr. Twigg, Clogher.—Has been 14 years engaged in vaccine inoculation, and no case of small pox after vaccination occurred in his own practice, and where he had been satisfied with the appearance of the vaccine in all its stages. The practice has lessened the frequency of small pox. He approves of re-vaccination.

Dr. Tate, Manorhamilton.—Has practised vaccination for 16 years, without meeting with a case, in his own practice, of small pox succeeding cow pock, where he considered the subject to have gone regularly through the disease. Has had frequent occasion to observe the protective influence of cow pock against small pox. His vaccinated patients have, in some instances, been inoculated with small pox, and exposed to its infection with impunity. Feeling assured that cow pock, when properly administered, is *permanent* in its effects, he disbelieves the *necessity* of re-vaccination and has always acted accordingly.

Dr. Taggart, Strabane.—Has been some years engaged in vaccination, to the average annual extent of about 200, without meeting a case of small pox occurring where he had attended to the progress of the complaint, and was satisfied with its several stages. He has witnessed the conservative influence of cow pock on several occasions. He knew a medical man some years ago, who had small pox to a most disfiguring extent, and who has since, as stated by the medical man who attended him, died of a second attack of the disease. Dr. Taggart confides in the *permanency* of the protection afforded by cow pock, and thinks re-vaccination unnecessary.

Dr. Verling, Enniscorthy.—Has been engaged in the army, and in all climates, and in private practice for 30 years, constantly using the vaccine virus; and never had a case of small pox occurring in a child vaccinated to his satisfaction. On investigating cases of reputed failure, he often traced them to ignorance or inattention on the part of practitioners; mistaking pompholyx, varicella, &c. for small pox, and confiding in imperfect vesicles. The lower orders in his neighbourhood use variolous inoculation, and by thus keeping up and spreading infection, fatal consequences ensue. About seven years ago he had a case of small pox attacking the same person twice. When in the army, he re-vaccinated many soldiers, but the vaccine never ran the regular course.

Dr. Veitch, Infirmary, Galway.—Has not had much practice in vaccination. The lower orders, who use small pox more than vaccine inoculation, seldom resort to his hospital for vaccination. He has seen many fatal cases of small pox from inoculation, and taken naturally, and also several cases after vaccination, most of which were mild, and very few were severe and confluent, but none fatal. He can only state those persons having had cow pock from the reports of their parents. He mentions a case of the coexistence of small pox and cow pock, on which the former took the lead and subdued the latter. Dr. Veitch considers it the safer plan to revaccinate at stated periods. He refers to Dr. Gray, of Galway, for further information on the subject of vaccination. (Vid. Dr. Gray's Letter already quoted.)

Dr. Wall, Cork.—Ten years extensively engaged in vaccination—has seen many cases of modified small pox after vaccination, but not one among his own patients. He always allows the vaccine vesicle to go through its various stages without interruption—has had frequent opportunities of ascertaining the antivariolous power of cow pock, by exposing his vaccinated patients to the infection of small pox—knows of no complaints appearing to have been occasioned by cow pock. Vaccination has lessened the frequency of small pox in his neighbourhood. The Doctor has no experience of the advantages of revaccination.

The Rev. John Webb, Bloomville, Geashell.—Has been for many years in the habit of vaccinating his poor parishioners, to the amount of 700, and not one of those he vaccinated took small pox, although often exposed to variolous infection. Small pox is almost eradicated in his neighbourhood. He has heard of two well authenticated cases of small pox occurring in adults, and in a severe form, who had been vaccinated—they are both much pitted. His own three sons, now grown up to manhood, had been vaccinated by himself in infancy, and have since resisted frequent exposure to variolous infection.

Dr. Williams, Belturbet.—Twenty-four years practising vaccination, and during that time many of his vaccinated patients were exposed to small pox infection, but only one case happened to him of small pox after vaccination. He has himself every confidence in vaccination, but the poor in his neighbourhood prefer having their children inoculated with small pox. Dr. Williams recommends revaccination every fourth or fifth year.

Dr. Woodroffe, Cork.—Has been 30 years much engaged in vaccine inoculation, during which time he has had abundant opportunity of testing the antivariolous power of cow pock, both in the hospital, to which he has been for 26 years attached, and in private practice. Three cases, however, occurred, in

which patients, who were vaccinated by himself, under favourable circumstances, and passed through the complaint quite to his satisfaction, took regular small pox. In one case, an interval of nine years intervened between the period of vaccination and the attack of small pox; in the second, a space of 15; and in the third, a distance of 23 years. In all the variolous disease was extremely mild, and in no instance confluent. He saw other cases of small pox after cow pock, but they were not vaccinated by himself, still he observed marks on the arms of the true vaccine character,—all occurred after the eighth or ninth year. He has seen occasionally a vesicular disease accompany cow pock, and followed by troublesome, and sometimes intractable sores. Vaccination has in his opinion had *immense* effect in lessening the frequency of small pox in Cork and its neighbourhood. In the western part of the county Cork, the antivariolous power of cow pock was known to the middle and lower orders, long before the introduction of vaccination. Dr. Woodroffe can form no decided opinion as to the *permanency* of the protection afforded by cow pock, but he is in the habit of recommending re-vaccination after an interval of seven or eight years.

Dr. Walsh, Coote Hill.—Upwards of 20 years engaged in the practice of vaccination—records eight cases of regular small pox, some of them in a very severe form, but none fatal, occurring chiefly in adults vaccinated by himself. He has no doubt of these patients having been regularly vaccinated during childhood, nor of the subsequent disease being in every instance well marked small pox. He has however had many opportunities of ascertaining the antivariolous power of cow pock, by exposing vaccinated patients to the infection of small pox, and though he repeatedly had them to sleep in the same apartments, with those ill of small pox, not one took the complaint. Vaccination has not had much effect in lessening the frequency of small pox in his neighbourhood, as the lower orders have no confidence in it.*

* I beg to call the attention of my readers to the great weight of evidence in favour of the *permanent efficacy* of cow pock, contained in the foregoing *summary*. The experience of 70 respectable Medical practitioners, which in some instances embraced a period little short of 40 years, affords but two instances of death from small pox after vaccination. Whilst five cases of death from small pox after small pox occurrred within the same experience.

No. II.

REPORTS FROM CHARITABLE INSTITUTIONS, HOSPITALS, DISPENSARIES, PRISONS, SCHOOLS, &c.

Doctor Goodisson, Senior Physician of the Mendicity Institution of this city, which contains on an average 3,000 persons, has given an account of three small pox epidemics in that Institution; one of which occurred in 1837, the other in 1839, and the third in the present year. In the first epidemic in 1837, the disease was chiefly confined to the nursery, in which were fostered 141 children with their mothers or nurses, many of whom were vaccinated during infancy or childhood. The small pox attacked 106 children, and proved fatal to several, yet all the mothers and nurses escaped the disease, though placed under circumstances most favourable for the reception of the infection. In February, 1839, a mother and child were admitted; the latter, labouring under small pox of a most malignant character, and having unfortunately escaped the vigilance of the officers of the Institution, they took their station in the nursery, where the infant died on the day of its admission. The mother remained with the dead child in the Institution for the greater part of the day, diffusing among the inmates the poisonous miasma; from which may be dated the commencement of the second epidemic, in which 71 cases of small pox were registered, of which number 10 proved to be varicella; of the 61 small pox patients, 21 died. During this epidemic, no case occurred of small pox succeeding to vaccination. In the epidemic of the present year, 35 cases of small pox occurred, of which number 15 proved fatal. One child, who was reported to have been vaccinated, died.

After giving a general account of these three epidemics, the Doctor states some facts illustrative of the efficacy of vaccination, in protecting the constitution from variolous infection, under the most favourable circumstances for its development, and adds, "Although many of the nurses or mothers had enjoyed no other security against an attack of small pox, except vaccination, practised at a remote period, and were necessarily in constant and intimate contact with their infant children during the whole progress of the disease, yet in no instance did this complaint make its appearance amongst them. They were constantly exposed to a concentrated and malignant contagion, emanating from the bodies of several persons simultaneously labouring under the disease, and condensed in the foul clothing of the inmates, literally breathing a variolous atmosphere, rendered ten-fold more virulent from the close confinement to which they were unavoidably obliged to submit. Yet, I must repeat the fact, in no instance did the small pox appear amongst the nurses.

These observations, in reference to the first epidemic, apply now with increased force in regard to the second and third, inasmuch as many of the nurses who had been exposed during the outbreak in 1837, have been replaced by new comers. The numbers thus exposed being greatly augmented; indeed during the periods of the tree epidemics, (the real must far exceed the apparent numbers) subject to the influence of the contagion; for though the registry of the nurses in the Institution exhibits 150 as the usual average, yet from the constant influx and reflux of paupers, many must have passed through the ordeal who were not noticed. The epidemic of 1837 commenced in the month of May, and continued until July; that of 1839 began in February, and terminated in May. The epidemic of the present year began in February, and ended in July; giving a period of twelve months, during which fluctuations and changes must have gone on to a great extent in the nursery. Thus in a community of 3,000 persons of all ages constantly exposed to a malignant and concentrated variolous contagion; during three epidemics, some hundreds of whom were vaccinated many years before, yet all escaped the small pox. Thus affording the most satisfactory evidence of the permanency of the vaccine protection."

Dr. Goodisson gives great credit, and very justly, to the Committee of Management of the Mendicity Institution, for the promptitude with which they carried into effect measures recommended to prevent the pestilence from spreading beyond the walls of the establishment, which was ultimately freed from the infection by the unremitting exertions of those gentlemen.

Dr. Cuthbert, Physician of St. George's Dispensary, states, that during the year 1839, there were 6,378 patients, and but one case of variola. During the first seven months of the present year, 1840, ending the first of August, there have been 4,700 patients, and 14 cases of variola.

Eliza Nowlan, aged five years; Mary, aged three years; and Theresa, aged six weeks—residence, 78, Summer Hill—none of them had been vaccined: they had bad confluent small pox, which proved fatal to the eldest and youngest. There were in the same house eight other children, more or less exposed to the infection—they had all been vaccinated, and all escaped.

Margaret Moore, aged nine months; Mary Hayes, aged eight years—residence, Russel Place. Moore had never been vaccinated—Hayes had by the Doctor, seven years back, on reference to the registry, the case was marked *slow* and *uncertain*—both had variola favourably.

Bernard Taylor, aged eight months—residence, Synnot Row, had not been vaccinated—has had variola favourably. There are eight other children in this family, seven of whom had been vaccinated, and one not. They were all frequently in the bed with the sick child, and all escaped.

Charles Jones, aged five months—residence, 3, Portland Row. His mother states that this child was nursed in the country, and she cannot therefore say that he was vaccinated. He has not the slightest mark on either arm, though his face is well marked by the small pox, from which he is now convalescent, there were two children in the room with him daily—they had been vaccinated, and escaped.

Fanny Watson, aged three years—residence, Canal Bank—had not been vaccinated—has had the small pox favourably. There were nine other children in this family, all of whom have been vaccinated; they were often in bed with the sick child, and all escaped.

Sarah Pender, aged 18 years; Patrick Ramsbotham, aged five years; John Keeley, aged 12 years—residence, in a cabin in Quin's Place, opposite Edward Terace. Pender had been a servant—her's was a case of bad confluent small pox, from which she is now recovering, very deeply marked. She thinks she was vaccinated when a child, but when, where, or by whom, she cannot tell. Ramsbotham had been vaccinated by Mr. H——, Summer Hill; but as that gentleman did not take any lymph from the child on the eighth day when he was brought to him—it is probable he did not consider the case satisfactory. Keeley had not been vaccinated.

Elizabeth Foley, aged 11 years; and Louisa Foley, aged six years—residence, 133, Lower Glocester Street. These children had not been vaccinated—they have had variola favourably; there are in this family six other children, who had been vaccinated. They were freely exposed during their sister's illness—they all escaped.

Anastacia M'Daniel, aged three years—residence, William Place, Lower Dorset Street—had bad confluent small pox, which proved fatal—she had not been vaccinated. There were seven other children in this family; they had all been vaccinated—all were exposed to the disease, and all escaped.

The Doctor observes, that beside the above 14 cases, there may have been a few others seen before the eruption appeared and entered in the registry, or sent into hospital as fever cases. The Doctor is thankful for having his attention drawn particularly to this subject. The impression previously on his mind being that small pox, even after satisfactory vaccination, was becoming a very frequent occurrence among us. The result of his inquiries, however, as far as they go, would lead to a different conclusion. Out of 1,700 cases, there were only 14 cases of variola; of these, 11 had never been vaccinated. One, No. 5, had been inoculated, but it failed; and from what he could learn of the other two, No. 9 and 10, he thinks the same may be said of them; three cases, Nos. 1, 3, and 14, proved fatal. He does not think that one of these cases of variola occurred after satisfactory vaccination, that such cases do occasionally occur,

he has no doubt, but much less frequently than is now very generally imagined. He knows a lady who was vaccinated when a child, and has since twice had an eruptive disease pronounced by the first practitioners in this city to be small pox, so that cow pock and small pox together will not prevent a return of the disease in some peculiar cases; but the majority of the cases now said to occur after vaccination, could the fact be accurately ascertained, would, he has no doubt, be found to have happened where the patients had not had the vaccine disease satisfactorily in the first instance.

The Doctor's faith in the preventive power of vaccination generally is not at all shaken. Were it not for it we would not, he says, hear of 36 or 40 children, beside adults, who never had small pox—daily exposed to the disease—often sleeping in the same bed with the sick, and with the most perfect impunity. Were it not for vaccination, he adds, we would now have small pox among us in its former virulence; and instead of 14 cases and three deaths, among 4,700 patients, our dispensary registry would have to record thousands of cases and hundreds of deaths.

Sick Poor Institution.—I have been favoured with reports of the prevalence of small pox at this Institution, by Dr. Hanna, for seven years, ending 1838; and by Dr. Gordon Jackson, for 1838–39 and 40. Dr. Hanna's registry shows in 1832, 35 cases of small pox; in 1833, 66 cases; in 1834, 62; in 1835, 59; in 1836, 71; in 1837, 109; and in 1838, 12. The Doctor cannot say whether any of these patients had been vaccinated, nor can he give any account of the mortality, there being no registry of deaths kept at the Institution. He preserved, however, the histories of 23 cases of small pox, of which number six had been vaccinated; and although some of them had the disease rather severely, they all recovered, whilst of the remaining 17, five died.

Dr. Jackson records 12 cases of small pox for 1838; 95 cases for 1839; and for six months of the present year, 65. He cannot for the reason already stated, give any account of the mortality. He observes, however, that so far as he can judge it has not been considerable, nor does he think the increased prevalence of small pox in the Liberties of Dublin during the present year, at all affects the protective agency of cow pock, since in nine cases out of ten, the children had not been vaccinated. The Doctor very obligingly sent me a report of the Cork Street Fever Hospital, which exactly agreed with one I had previously received from Dr. Kennedy.

South East Dispensary.—Dr. Bigger had in 1837, 39 cases of small pox under his care, of which number 18 bore marks of vaccination; and all recovered, of the 21 unvaccinated, seven

died. The fatal cases had malignant cynanche. In 1838, 18 dispensary cases, and two in private practice; 12 of these were reported to have had cow pock—all recovered. One unvaccinated, died. Although the Doctor's dispensary duty increased four fold in 1839, yet he had but 12 cases of small pox—all recovered. During seven months of the present year he had but four dispensary cases, and seven in private practice—all recovered.

Mary's Dispensary.—Dr. Kirkpatrick reports, that 38 cases of small pox occurred, during the year ending, May 1838, and about 20 in each of the following two years; and during six months of the present year, 12 were registered. No account is given of any of them being vaccinated. About five deaths occurred in each year.

Dr. Harty has obligingly furnished me with several particulars relative to the prevalence of small pox in the four criminal prisons of Dublin, which I must consider very interesting, since, as the Doctor remarks, an experience for many years in the department has shown him, that the inmates of these prisons, varying as they do in age as well as sex, suffer their proportion of any epidemic prevailing in the city, and may, therefore, be considered as capable of affording, particularly among the middle or lower ranks, a pretty fair indication of the extent to which any particular disease prevails, as, for instance, the small pox.

Newgate receives men, boys, and women, with their very young children, before trial, to the number of about 5,000 annually. Within the year 1839, there were many cases of measles, hooping cough, and scarlet fever, but only one case of small pox. During the present year, to August the 10th, there were eight cases of small pox, and three deaths.

In Grange-Gorman Penitentiary, which receives more than 5,000 females annually, fourteen cases (five of which were brought into the prison) of small pox occurred within the same period; of which number almost all were confluent, and six died. The patients, with one exception, an insane dumb girl of seventeen, being under two years of age.

In Richmond Bridewell, which now receives about 3,000 male adults annually, no case of small pox occurred within the period mentioned; and the

Smithfield Penitentiary, which admits between 300 and 400 boys annually, has enjoyed an equal freedom from small pox, which Dr. Harty attributes to the greater number of them being the children, not of mere paupers, but frequently of parents in

comfortable circumstances, who had taken care to have them vaccinated. He lately found that among 100 boys in this prison, there were not 10 upon whose arms a marked vaccine cicatrix was not perceptible.

Doctor Harty has further communicated the pleasing fact, that in the BLUE COAT HOSPITAL, containing 130 boys, of all ages, from nine to sixteen years, he has not had a death from small pox, nor even a confluent case of that disease, during 29 years that he has been physician to the establishment. All would appear to have been so regularly vaccinated before admission, that the Doctor, having within the last year, upon occasion of a distinct varioloid eruption, examined all the pupils, and selected 30 of them, upon whose arms the vaccine cicatrix was least perceptible, vaccinated the whole of the 30, and produced a perfect vesicle in two only.

DR. GREENE has favoured me with a tabular view of 25 cases of small pox, which came under his observation at the hospitals connected with the House of Industry, from 1st Jan. 1837, to May 1st, 1840; of which there were

Vaccinated with a distinct cicatrix on the arm, . .	6
Not vaccinated, as inferred from the absence of the cicatrix, ...	4
Vaccinated—but imperfectly—inferred from imperfect cicatrix, ...	2
Not vaccinated, ...	13
	25

The disease in all the non-vaccinated was confluent,	13
——— in the imperfectly vaccinated, was confluent in all, ...	2
——— in the cases where the cicatrix was absent, 2 confluent and 2 discrete, . . .	4
——— in the vaccinated cases, discrete in all, with few pustules, and mild fever, . .	6
	25

Of the non-vaccinated, 6 out of 13 died; ages were 24, 30, 16, 16, 19, 45.

The Doctor adds—"As far as my own experience goes, I infer, from a consideration of these cases and of others, but of which I have no accurate notes, first, that vaccination has been of late years much neglected; secondly, that when performed, it has been done so imperfectly; thirdly, that when vaccination has been properly performed, as evidenced by the characteristic cicatrix on the arm, the probabilities of a person getting variola

are much diminished, and if it does occur, it is generally in a mild form; fourthly, that when vaccination has not been performed, and variola occurs, it is generally confluent, and is more fatal in the adult and middle ages, than in the junior periods of life."

House of Recovery and Fever Hospital.—Doctor Kennedy, one of the physicians of this establishment, states that from January, 1839, to April, 1840, forty cases were admitted in various stages of small pox; of this number seven only, all males, had been previously vaccinated, as evinced by a cicatrix on the arm. Their ages were, one of 30, two of 20, two of 7, and two of 1 year. Of these seven, two died at the ages of one and seven years. In both the disease was confluent, and both had the regular vaccine cicatrix, but no accurate history of previous vaccination could be obtained. The Doctor mentions these cases as favouring the opinion that the appearance of the cicatrix is not always *per se*, a sufficient evidence of perfect vaccination, which opinion, he thinks, may derive some confirmation from the following cases, which occurred to him several years ago, when engaged in dispensary practice. A child aged eight years, came under his care in confluent small pox, and in whom the vaccine cicatrix was well marked. The mother stated that the child had cow pock, when an infant, regularly. To test the truth of the statement, he searched the registry at the Cow Pock Institution, where the infant had been vaccinated, and found the following record, "8th day rubbed," but no account of subsequent attendance as enjoined by the rules of the Institution. (Where the vesicle is rubbed off, it cannot be safely trusted to.) At the period alluded to, he met with *secondary* small pox in two adults, who had been inoculated with variolous matter in infancy, and in each individual the cicatrix, after inoculation appeared to be perfect. The Doctor adduces these instances to show the necessity of acquiring an accurate history of these cases of variola, where vaccination had been previously performed, before we call in question the benefit to be derived from this invaluable remedy.

Of the 33 non-vaccinated, . .	9 died.
Of the 7 vaccinated, . .	2 died.
Deaths out of the 40 cases, . .	11

Mercer's and Sir Patrick Dun's Hospitals.—Accurate returns of cases of small pox, after vaccination, cannot be procured from these hospitals; but Dr. Lendrick, who is one of the physicians of both, states the impression on his mind to be, that of the many cases of small pox he has seen, the great proportion occurred where vaccination had not been practised, and that the secondary disease was always mild in its character. The Doctor has not *seen* a fatal case of small pox post vacciniam.

Steven's Hospital.—Mr. Robinson, Apothecary of the hospital, states that from the 1st of May, 1839, to 16th of July, 1840, he has seen twelve cases of small pox. Of these, six were admitted into the hospital, and three died. Of the remaining six extern patients, one died. One of the twelve, who had been vaccinated, had a mild small pox. It was not known whether any of the others had been vaccinated.

Meath Hospital.—Mr. Parr, Apothecary of the Hospital, on looking over his registry for the last two years, has found only 10 cases of small pox recorded, which were partly from the country and city, and a few from on board vessels in the river. There may have been, Mr. Parr thinks, a few more small pox cases, which on admission were registered as fever patients. It was not ascertained whether any of the 10 patients had ever been vaccinated. In two, the small pox being of a malignant character, proved fatal.

Royal Hibernian Military School.—Dr. Macauley, formerly Surgeon of this establishment, which contains 600 children, states, that during his incumbency of 10 years, there occurred no death from small pox, though the disease, generally however, in a mild and modifid form, occasionally visited the Institution.*

Dr. Finnie, Dr. M'Cauley's successor, states that no case of small pox has occurred in the establishment during the last two years.

On visiting the Parochial Charity Schools through Dublin, which contain on an average from 14 to 40 of both sexes, each, from the age of eight to 16 years. I was much gratified to find the complete exemption they had all for many years enjoyed, from small pox. In none was a fatal case recorded; in some, not a single case was said to have occurred for several years; and the master of St. Bridget's School, which maintains 20 boys, assured me, that during 30 years he was in charge of it, no case of small pox was observed by him. On visiting the Hibernian Marine School, I received from the matron, who had been there 29 years, the following account:—In 1811, the number of boys being 112, was afterwards increased to 180; of late, however, from want of funds, the number has been reduced to 20. No

* Dr. Macauley takes the opportunity of communicating an interesting case, strongly confirmative of the permanency of the cow pock protection. "Captain B——, on the staff, had a family of seven children; his second son, a medical student, whilst dissecting a subject who died of small pox, absorbed the virus and passed through a severe attack of the disease. He was in his father's house with the other six children, some of them grown up, and who were most anxiously attending their brother. The Doctor inoculated the whole family from their brother; the result was favourable, not one of them took the small pox. The pustules on their arms resembled spurious cow pock—not a small pox pustule appeared on any of them—they had all been previously well vaccinated.

death from small pox has taken place since her appointment, nor does she recollect even an instance of the disease appearing in a severe form, though she recollects to have seen a few mild cases.—In all these establishments, strict attention is paid to vaccination.

I may here add the following statement made to me by Dr. Faussett:—On the 26th of May last, a child was introduced to the Infant School on the Strand, (there being then present 30 who had been previously vaccinated, and three unvaccinated children,) who had but recently recovered from small pox, and who still bore upon his body some red spots, traces of the previous disorder; the consequence of his mixing with the healthy children was, that two of the three unvaccinated children took the disease, whilst the 30 who had been preserved by previous vaccination, escaped. This fact, though in itself, as the Doctor observes, remarkable, becomes still more worthy of note when contrasted with a statement he quotes from Van Swieten's Commentaries, vol. 15, p. 33, "I have seen whole Colleges," says this author, "infected with small pox merely by a boy, who had had the disorder, returning to school and mixing with the other boys, before the red spots, left on his body by the disorder, were worn off"

The Rev. T. R. Shore has communicated to me, that the *Protestant Orphan Society* has had, since 1828, upwards of 350 children under its care; as they were all originally under nine years of age, care was taken to have every one vaccinated; they were then placed in farmer's houses through the County Wicklow, where 280 of them still remain, attending the parish school in their respective neighbourhoods, and of course liable to infection as much as any children in the world, and in no single instance, out of the large number so located, did any Protestant orphan take the small pox, although that disease had been frequently observed through the several localities.

In addition to the foregoing statements, I have been favoured with reports from several respectable medical gentlemen in Dublin, which, though differing essentially on some points, are *all* favourable to vaccination. The conflicting opinions chiefly respect the general prevalence and fatality of small pox in the city,—its occurrence after vaccination—and the period at which it is subsequently most likely to occur; but to prevent misconception, I shall give an abstract of the several communications, which chiefly refer to the last two years, where the contrary is not stated; and where I omit to mention vaccination, it may be inferred that there is no evidence of its having been practised in the cases of such omission.

Doctor Brady, of Dominick Street—Has had under his

care five cases of small pox, four of whom are reported to have been vaccinated. One was at the breast, three between two and three years old; the last the severest, eight years old—all terminated favourably.

Doctor Colles has not seen a fatal case of small pox.—He has lately seen one case of distinct small pox which went through all the stages of that disease, although the patient, a woman of 25 years of age, had very well marked cicatrices of vaccination on her arm.

Mr. Wilmot.—Has not seen many cases of small pox, such as came under his observation had taken place after vaccination, with the exception of two cases. In every instance, the disease appeared much modified, and no fatal termination took place.

Doctor Collins has had but one case of small pox, in an unvaccinated infant eight weeks old, which terminated fatally.

Doctor Whitestone.—Has not seen a single unequivocal case of small pox within the period mentioned. He had formerly seen a few cases of small pox succeeding to reputed vaccination, but in none of them was there a fatal result, nor any serious after effects.

Mr. Leech, of Parliament Street.—Has had, within the period mentioned, six cases of small pox under his care, two of which terminated fatally—does not say whether they were vaccinated or not.

Mr. Moore, of South Anne Street.—Has had but one case of small pox under his care. The patient was an infant, and died—cannot say whether the child was vaccinated or not.

Doctor Churchill.—Has seen very few cases of small pox of late years. Some of them after reputed vaccination; all recovered except one, which was complicated with premature labour, and the patient sank suddenly without his being able to ascertain the cause.

Mr. Nicholls, of Dawson Street.—Has seen three cases of small pox in non-vaccinated persons, and 25 cases after vaccination. Two of the latter number proved fatal; one, from a diseased constitution, appeared to be destroyed by the severity with which the disease set in; the other, Miss M——, in whom vaccination, which had been performed 20 years before, appeared to exert no protective influence. Most of the other cases had but little indisposition with the exception of two or three, in whom the attack begun with great severity, but lightened immediately on the coming out of the eruption. It would appear,

says Mr. Nicholls, that *re-vaccination* does not prevent small pox, as in a recent instance a young person was seized with the complaint, though having some weeks before undergone vaccination a second time.

Mr. Ferguson, of Kildare Street.—Although he has heard a great deal of the prevalence of small pox, yet has only seen in a tolerably extensive practice but two cases, both adults after reputed vaccination; one the lady, (whose case is mentioned at page 51,) the other, a young man 27 years of age, who had the disease mildly, but it ran its usual course.

Sir A. Clarke, of North Great George's Street.—Had four cases of small pox under his care during the period mentioned. Two of them were young men in the Metropolitan Police, one of which proved fatal; the other two, one a lady 28 years old, the other a young man, were of the confluent kind, and left the subjects greatly marked. They were all reputed to have been vaccinated.

Mr. Keogh, of Merrion Row.—Has had three cases of small pox; two after vaccination, one in the natural way of a favourable character—they all recovered; in the two, after vaccination, the disease was very much shortened, and without secondary fever. The other case, being of a mild kind also, terminated favourably.

Dr. Speedy, of Arran Quay.—Had but two cases of small pox within the period mentioned, in non-vaccinated patients, both recovered.

Mr. Neary, of William Street.—Has not seen a case of small pox within the period mentioned.

Mr. Ryan, of Britain Street.—Has had 12 cases of small pox and no death.

Mr. Collis, of Merrion Square.—Reports that in the summer of 1839, William, the eldest son, a clergyman of Mr. H——, took small pox at his parish in the country, and had it severely. Last April his younger brother, 20 years of age, took the disease in Dublin. Soon after this his sister took it; she had a copious eruption, but not confluent. The eldest sister also took the disease, but had it much lighter. The three youngest sisters, whom Mr. Collis had re-vaccinated 18 months before, escaped, although in the house all the time. They were all vaccinated formerly by the late Dr. C——, and had characteristic cicatrices on their arms.

Mr. Adams, of Grafton Street.—Had but one case of small pox under his care, which was of a mild kind, and the child recovered.

Dr. M'Keever, of Cavendish Row.—States that, during 20 years of extensive hospital and private practice, he has seen between thirty and forty cases of *varicella* in children who had been previously vaccinated; but in no instance did he witness a fatal termination. A few cases were attended with sharp inflammatory symptoms, which, however, speedily yielded to ordinary treatment. In the majority of those cases, he was unable to determine whether the vaccine vesicle had undergone proper inspection; but in six cases the vesicle had presented the most satisfactory appearance.

Mr. Atkinson, of Bridge Street.—Has had but two cases of small pox within the period mentioned. They were both confluent, and proved fatal. In neither case had vaccination been used. Has never witnessed a case of small pox after vaccination.

Dr. Shekleton, of Gloucester Street.—Has not witnessed more than four or five cases of small pox succeeding to vaccination, within 20 years. All terminated favourably; no secondary fever or marks. None of those cases were vaccinated by himself, nor is he aware that any child he ever did vaccinate, in private practice (of course, some hundreds,) has been attacked with small pox afterwards.

Mr. Mulock, of Charlemount Street.—Has had under his care one case of confluent small pox, and three of modified small pox; none fatal.

Mr. Carolin, of Townsend Street.—Has seen but one case of small pox. The subject of it was a sailor, aged 20 years, who said he had been vaccinated when young. He recovered without any untoward symptoms.

Mr. Madden, of James's Street.—Has had under his care twelve cases of small pox, but cannot recollect a single death.

Mr. Herron, of Sackville Street.—Has not had a case of small pox within the period mentioned.

Mr. Halahan, of Stephen's-Green.—Has seen very few cases of small pox, and none after vaccination.

Mr. Harrison, of North Earl Street.—Had but one case of small pox under his care, which was in the person of a gentleman, 28 years of age, said to have been vaccinated during

infancy. The attack was severe; the eruption partially confluent; but without any other symptom indicating danger; and the recovery was perfect.

Mr. Clendenin, of Baggot Street.—Has met with several cases of small pox. None proved fatal, though the symptoms in some were violent, and one child lost its eyes.

Mr. Empson, of Dorset Street.—Has not had a case of small pox under his care for a long time. Two years ago he attended on two persons who had *previously* had small pox. Each of whom were severely attacked by that disease; and one, a female, was severely marked.

Mr. Atkinson, of Gardiner Street.—Has not had, within his practice for 25 years, a fatal case of small pox after vaccination.

Dr. O'Beirne, of Cumberland Street.—Has seen but three cases of small pox, which occurred in the cases of poor children brought to the Richmond Hospital.

Mr. Price, of Harcourt Place.—Has had but one case of small pox in a non-vaccinated girl, 10 years of age. The disease was favourable, and the recovery rapid.

Dr. Thomas Beatty.—Has had only two cases of small pox, which occurred at a school in the neighbourhood of Dublin, in the persons of two young gentlemen, one 14, the other 15 years of age; both of whom had been vaccinated during infancy. The eldest had the disease very mildly. The younger was covered from head to foot with the eruption; but the modifying influence of cow pock exhibited itself in the mildness of all the concomitant symptoms. The eruption appeared on the third day, after which all fever vanished; the pustules were fully maturated on the fifth, and were drying up on the eighth day. There was no secondary fever, and both boys recovered perfectly.

Mr. Carroll, of Leinster Street.—Has had six cases of small pox after vaccination. The commencement of the attack was in all accompanied with smart febrile symptoms, which, however, subsided about the third day of the eruption. He has had no fatal case. He has seen three cases of small pox in non-vaccinated patients, but all recovered.

Mr. Reynolds, of Bride Street.—Has seen eight cases of confluent small pox; seven unvaccinated, and one had had the cow pock. Of the unvaccinated patients, one died, as did also the vaccinated patient.

Mr. Carmichael, of Stephen's Green.—Has had under his care three cases of small pox; two of them were slight, and the other very severe. They all, however, terminated favourably, and without any marks. They were between seven and ten years of age, and had been previously vaccinated.

Mr. Collins, of William Street.—Has within the last six years met three or four cases annually of small pox, occurring, with one or two exceptions, after reputed vaccination. In a few the cow pock cicatrices were moderately well marked, but not so in the majority. The disease was, in general, mild, with moderate fever; two had smart fever and copious eruption; but all recovered. One boy, whom he saw but once, died as he was informed; and he heard of another child, in the same family, who died also. Has seen nothing to lessen his confidence in vaccination.

Dr. Douglas.—Has had no fatal case in his own practice, during 35 years, of small pox after vaccination, nor does he recollect any person whom he vaccinated himself, having been subsequently attacked with small pox.

Dr. Peebles.—Has had not more than twelve cases of small pox under his care during the last two years; none proved fatal. Heard reports of small pox being prevalent and fatal in several places, but on inquiry found that they were much exaggerated; and lately he found great difficulty in procuring small pox infection for a country friend.

Mr. Delany, Thomas Street.—Has within the last two years seen twenty-three cases of severe small pox; of which number six proved fatal. Five were said to have been vaccinated at the Cow Pock Institution; but it appears by the registry there, that they were never brought back for examination; of course, their having passed through cow pock regularly or otherwise, must be a matter of doubt; and the same, I apprehend, may fairly be said of two thirds of the cases of reputed failure of cow pock.

Mr. Hamilton, Rathmines Mall.—Met with only three cases of small pox in unvaccinated children during the last five years. One was confluent, and proved fatal. The remaining two were mild, and both recovered.

Dr. O'Rielly, Dominick Street.—Has seen seven cases of small pox. Four occurred after vaccination, and the disease proved mild, terminating without secondary fever. In the three non-vaccinated subjects the disease was severe, and fatal in one case. The Doctor gives an interesting account of a woman, whose infant at the breast took the small pox in a severe and

malignant form. She continued to suckle the infant till its death, which occurred on the eleventh day; but having had the cow pock herself in infancy, she escaped the disease. He also relates cases in which he was so fortunate as to supersede small pox by vaccination, when the subjects had been for several days exposed to the infection.

Mr. Barker, Britain Street.—Has had very many cases of spurious small pox after vaccination. In some the eruptive fever was very great, but it altogether subsided on the seventh or eighth day of the eruption. Many of his patients are much marked. The disease was most severe in those near or above twenty years of age; and, on the contrary, in every case where the age was under fourteen years, the disease proved comparatively mild. No fatal case occurred in his practice.

Dr. Stevenson, Summer Hill.—Witnessed a fatal case of small pox in a non-vaccinated child. He saw two women who were reputed to have been vaccinated in infancy, ill of small pox. In both cases, their children, who had been previously vaccinated, slept with their mothers during the whole course of the disease, yet escaped infection.

Dr. John C. Ferguson.—Has not preserved a registry of his small pox patients; but he states with confidence that he has of late observed a marked diminution, both in the frequency of occurrence, and severity of the seizures, and adds, during the last six or seven years he has not met with a single case that might not be termed modified; in none of which did any serious symptom occur.

Dr. Faussett.—Has witnessed, within the period stated, in dispensary and private practice, twenty-eight cases of small pox; four of which number proved fatal; one of them, a delicate child, was said to have been vaccinated, but not by a skilful person. Ten of the remaining twenty-four were also reported to have been vaccinated; two of them at the Cow Pock Institution, but only one returned for inspection on the eighth day, when appearances were correct, and lymph taken from the vesicles for future vaccinations; no opportunity, however, being afforded of afterwards examining this child, we cannot say that it passed through the latter stages of cow pock regularly. Of the eleven cases five were under seven years of age, and six under ten years.

Of the 11 cases reported to have been vaccinated . . . . . 1 proved fatal.
Of the 17 unvaccinated cases . . . 3 proved fatal.

The Doctor relates two cases of the co-existence of small pox and cow pock. In one of which the cow pock being early de-

veloped, controlled and rendered milder the small pox, the eruption of which, scattered over the body, but not confluent, was ushered in by convulsions. There was a good deal of fever for a couple of days, but the child recovered rapidly. In the other case the small pox appeared to have taken early possession of the constitution, and ran its course uncontrolled, with much fever and confluent eruption. The child, however, recovered, and was but slightly marked. Both were vaccinated on the day of exposure to the variolous infection; in both the cow pock took effect. In the first case, a well marked vaccine vesicle, surrounded by its characteristic areola, appeared on the eighth day; in the other case the vaccine vesicle was surrounded by *a good deal of redness on the 5th, and turned yellowish on the 6th day;* and it would appear also, that in this case the variolous eruption appeared a day earlier than in the other, and influenced the progress and appearance of the vaccine affection.

Mr. Kennedy, Capel Street.—Has seen very few cases of small pox, and those chiefly among the poor, who had not been vaccinated. He has occasionally seen mild small pox, in cases where vaccination was said to have been used; and two cases of confluent small pox, attended with low fever, petechia, and other bad symptoms, which for a time threatened fatal results, which, however, ended favourably. Mr. Kennedy saw but one fatal case of small pox, which occurred in hospital. No previous history of the case could be obtained, though there were good vaccine cicatrices on the arm. He re-vaccinated a family of six, after an interval of from ten to eighteen years, and inoculated another family of eight with small pox matter. The result was in all these cases, a "simple ulcerated arm."

Dr. M'Cready, Andrew Street—States that there have been considerably more cases of small pox within the last two years than usual; and of such cases as came under his notice, a third proved fatal, chiefly among the poor, who neglect vaccination. Has seen three or four cases of small pox after reputed vaccination; two of them severe, but none fatal. But of those vaccinated by himself, from 12 to 20 a-week during the summer, he has had no failure, except in a few cases where the children had been exposed to variolous infection previous to vaccination, and in which the small pox appeared before the maturation of the vaccine vesicle. The Doctor thinks it would be well to determine the question, "Can a child, by vaccination, receive from the child which affords the lymph any cutaneous or other disease?" He himself is disposed to answer the question in the negative, and I have already given proofs of the correctness of his answer.

Mr. Mansfield, Camden Street.—States that 35 years experience in vaccination has satisfied him of its efficacy. He has witnessed cases of small pox after reputed vaccination, in which,

though the precursory fever was urgent, it immediately declined on the appearance of the eruption, and the patients, in every instance recovered favourably.

Mr. Buckley, Leeson Street.—Has seen, within the last two years, about 32 cases of small pox. One a man aged 45, proved fatal; cannot exactly say whether any of these persons were vaccinated. In 1837, he witnessed a few cases of small pox in grown up individuals, who said they had been vaccinated in early life.

Mr. M'Munn, Britain Street.—Returns five cases of small pox, reported as having been vaccinated at the Cow Pock Institution. One, a case of the co-existence of small pox and cow pock; the eruption of the former appearing on the fourth day after the inoculation for the latter. The disease proved severe, and the child had a slow recovery. Catherine Norton, vaccinated April, 1831; Catherine Kane, May, 1831; Owen May, July, 1830; and John Kane, 1840, all at the Cow Pock Institution. Never having returned for inspection, they must have remained in a doubtful state as to their vaccination.

Having frequently of late traversed the city, making inquiry as to the prevalence of small pox, I saw several cases of it; and upon more occasions than one I witnessed a whole family of children laid up with it; some of whom, having been previously vaccinated, had the complaint in a comparatively mild form; but the majority, being unvaccinated, suffered more severely. Few deaths, however, were reported to me, and the result of the inquiry strengthened the opinion I had already entertained as to the diminution in the frequency and fatality of small pox in Dublin; and evidence to the same effect has been already adduced.

I now beg to close, with the concluding remarks of the *Report of the Vaccination Section*, in every sentiment of which I most fully concur.

"The investigation in which we have been engaged, has brought before us every question connected either with the theory or practice of vaccination. The history of the discovery, the doctrines of the discoverer, and the directions which he delivered for the successful diffusion of the practice, have all in turn occupied our attention. We have likewise been called upon to compare these doctrines and these directions with the experience of later times; and what has been the result? a firm and well founded conviction of the accuracy of the investigations of Dr. Jenner, and an increased reliance on the soundness of his principles, and the matchless skill and perseverance which enabled him to publish his inquiry in a state of completeness and efficiency, unexampled in the case of any preceding professional investigation. In no instance have his opinions been successfully combated; and his very conjectures, like some of the bright anticipations of other illustrious men, have been stamped with

the permanent characters of scientific truth. The name he gave the disease, which was the subject of his anxious research, affords one illustration of this remark. The term *variolæ vaccinæ*, as we remarked at the outset, involves in its meaning the entire theory of its prophylactic power, as well as of its medical and literary history. The latter part of the subject has now received ample confirmation, and when the whole is duly weighed, as doubtless now it will be, it will show that his expectations of permanent benefit from the substitution of a mild for a malignant disease rested on an imperishable basis. Again, his opinion that the horse was an animal liable to an affection similar in its protecting power to that derived from the cow, though at first treated as a wild and crude imagination, has at length come forth with all the strength of demonstration.

"We have now to say a few words on the wisdom which dictated his directions for the propagation of the disease. Considering the newness of the subject, and the extraordinary results that were anticipated, contradictions and obscurities might have marked the infancy of the practice. But it was not so in the present instance. The character of the vesicle, its first appearance, its subsequent progress, its deviations from a healthy condition, the aspect of the areola, the purity of the lymph, and the time and manner of its insertion, so as to secure the perfect development of the affection; these, and all other particulars connected with the successful employment of this life-preserving agent, were deduced from his matured and well-digested investigations, with a degree of precision and perfection from which future observations have taken nothing away, and to which they have added but little.

"We think it right not to allow this opportunity to escape, without insisting upon these points. We do it not merely for the purpose of eulogizing Jenner, but because they are intimately connected with every part of our labours; and almost all the suggestions which we have delivered, necessarily carry us back to that patient, and wise, and enlightened mind from which the practice arose.

"It well becomes us, therefore, emphatically to mark these things. Jenner, during his life-time, had a hard measure dealt out to him. His whole existence was one continued struggle to uphold and disseminate what he felt and knew to be truth; and it is unquestionable that most of the anomalies and difficulties which have marred and obscured the practice of vaccination, may be traced to the errors of those who distrusted his doctrines, and disregarded his precepts. We rejoice to have such an occasion as the present to express this our deliberate conviction, and to declare in the face of this Association how thankfully and gratefully we offer this tribute to the genius and virtue of so great a benefactor of his race.

"JOHN BARON, M.D., *Chairman.*

"*Cheltenham, July* 20, 1839."

FINIS.